BIG BEND

Sub-Regional Integrated Resource Plan

Alberta

BIG BEND
SUB-REGIONAL
INTEGRATED RESOURCE PLAN

Approved by the Economic Planning and Resource
Development Committee of Cabinet on June 19, 1985

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PREFACE

This planning document was prepared by involved government agencies and public consultants in recognition of the need for improved management of Alberta's lands and resources. It applies only to public lands within the Big Bend planning area, and not to any private or federal lands.

The plan presents the Government of Alberta's resource management policy for the public lands and resources within the area. It is intended to be a guide to resource managers, industry and publics having responsibility or interests in the area rather than a regulatory mechanism. Resource potentials and opportunities for development are identified with a view to assisting in the economic progress of Alberta. The plan is sufficiently flexible so that all future proposals for land use and development may be considered. No legitimate proposals will be categorically rejected. The provincial government is committed to serving Albertans; should a proposal not be in keeping with the provisions of the plan, every means will be taken to explore alternative means for accommodating the proposal in a more appropriate location, either in this planning area or on other public lands. The rejection of any proposals will only be done in writing by the associate minister or his designate.

A detailed outline for implementation will be provided for this sub-regional plan in order to identify the necessary implementation actions and roles. This implementation outline will also provide for the continuing review of the plan so that it may accommodate changing needs and situations. Wherever possible, the private sector will be provided the opportunity to be actively involved in the operational delivery of the plan.

Implementation is to be subject to normal budgetary approval process with overall priorities to be established with consideration of opportunities in other planning areas and areas currently outside the planning process.

While the plan identifies resource potentials and opportunities, the realization of these may require the dedication of major amounts of public funds. The plan will be used on the understanding that any actions required for implementation will only be undertaken as budgetary approvals are given in the normal way. The private sector will be given the first opportunity to provide any development required.

This plan has no legal status and is subject to revisions or review at the discretion of the Associate Minister of Public Lands and Wildlife.

HIGHLIGHT SUMMARY

The planning area is centrally located between the towns of Athabasca and Slave Lake, encompassing about 4 500 km^2 (1 750 sq. mi.).

The plan expresses the provincial government's intentions for the allocation, use and management of public lands and resources. It promotes the co-ordinated management of resources and creates opportunities for private sector development.

Over 200 000 acres of Crown land are identified for agricultural expansion. About 25 per cent of this total is likely to have till cropping capability and most of the remainder will be suitable for grazing. Additionally, the plan provides opportunities for both improved and unimproved grazing on Crown lands outside the agriculture area of emphasis.

A realigned Green/White Area boundary will reflect the changed land use priorities. There will be a significant increase in the size of the White Area in the planning area.

The plan proposes creating numerous opportunities for expanded recreation and tourist use. The focus is on water-oriented opportunities and a mix of private and public recreation developments is intended. Three distinct levels of recreation development are proposed:

- an institutional focus catering to organized groups and local authorities through localized intensive recreation developments;
- localized development nodes providing for intensive recreational use; and
- lakes with a natural environment theme providing for extensive recreational opportunities with only primitive facility development.

Subject to lake capability constraints, scope is provided for private sector development of recreational cottage subdivisions adjacent to both Lawrence and Fawcett Lakes. Opportunities are also provided for small-scale commercial recreation development (including campgrounds, boat launches, rental cabins and small lodges).

Management of the timber resource will continue to honour existing commitments for commercial and non-commercial demands. North of the Athabasca River, the focus will be on large volume, sustained yield commercial timber harvesting. South of the Athabasca River, the focus will be on small-scale commitments to satisfy the needs of the local community and to supply economic opportunities--ranging from income supplements for the local farming units to the provision of an assured supply of low-cost building materials.

An expanding agricultural land base will lead to changes in both hunting pressures and the composition of wildlife species. Overall, wildlife resources will be adversely affected. Mitigating measures proposed by the plan will ensure the retention of viable populations of ungulates, upland and migratory birds and furbearers.

Minerals exploration and development operations will continue to be conducted under standard operating conditions over the vast majority of the planning area.

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LIST OF ABBREVIATIONS

AAC	Annual allowable cut
AFS	Alberta Forest Service (a division of ENR)
County 12	County of Athabasca, No. 12
CTP	Commercial timber permit
DTA	Decidous timber allocation
DTP	Deciduous timber permit
ENR	Alberta Department of Energy and Natural Resources
F & W	Fish and Wildlife Division (of ENR)
FMA	Forest management agreement
FMU	Forest management unit
ID 17	Improvement District No. 17 (East)
Lands	Public Lands Division (of ENR)
LTP	Local timber permit
MD 92	Municipal District of Westlock, No. 92
OHV	Off Highway Vehicle
REAP	Resource Evaluation and Planning Division (of ENR)
RIC	Resource Integration Committee
RMA	Resource management area
RPB	Resource Planning Branch (of REAP)
RSA	Revised Statutes of Alberta

1. INTRODUCTION

1.1 Descriptive Synopsis

The Big Bend Planning Area is approximately 4 500 km^2 (1750 sq. mi.) in size and encompasses most of the big bend of the Athabasca River (Figure 1). Most of the area is blanketed by an undulating morainal plain originally supporting a mixedwood boreal forest. The Athabasca River divides the planning area and is the most significant geographical feature in the sub-region.

The northern two-thirds of the planning area lies in the Green Area, but is split by a wedge of White Area lands. The southern third of the planning area is in the White Area. Considerable amounts of Crown land remain in the northern portion of the White Area while in the south patent cleared lands predominate.

The focus of agricultural activities is on livestock, feed grains and forage production. Cereals are grown for cash crops, but climatic conditions are marginal for reliable production on an annual basis.

Crown lands sustain a wide range of resource uses including timber harvesting, improved and unimproved grazing, and the exploration and development of minerals resources. Additionally, these lands provide recreation opportunities and contain a rich variety of wildlife habitats.

1.2 Planning History and Process

The Big Bend plan was initiated by the Forest Land Use Branch of the Alberta Forest Service (AFS) prior to the formation of the Resource Planning Branch (RPB) in October, 1976. Consequently, the evolutionary history of the plan differs somewhat in process from other Integrated Resource Plans (IRPs).

An interdepartmental planning team was formed and co-ordinated by the RPB. The composition of this team evolved from solely AFS membership to include both interdivisional and interdepartmental

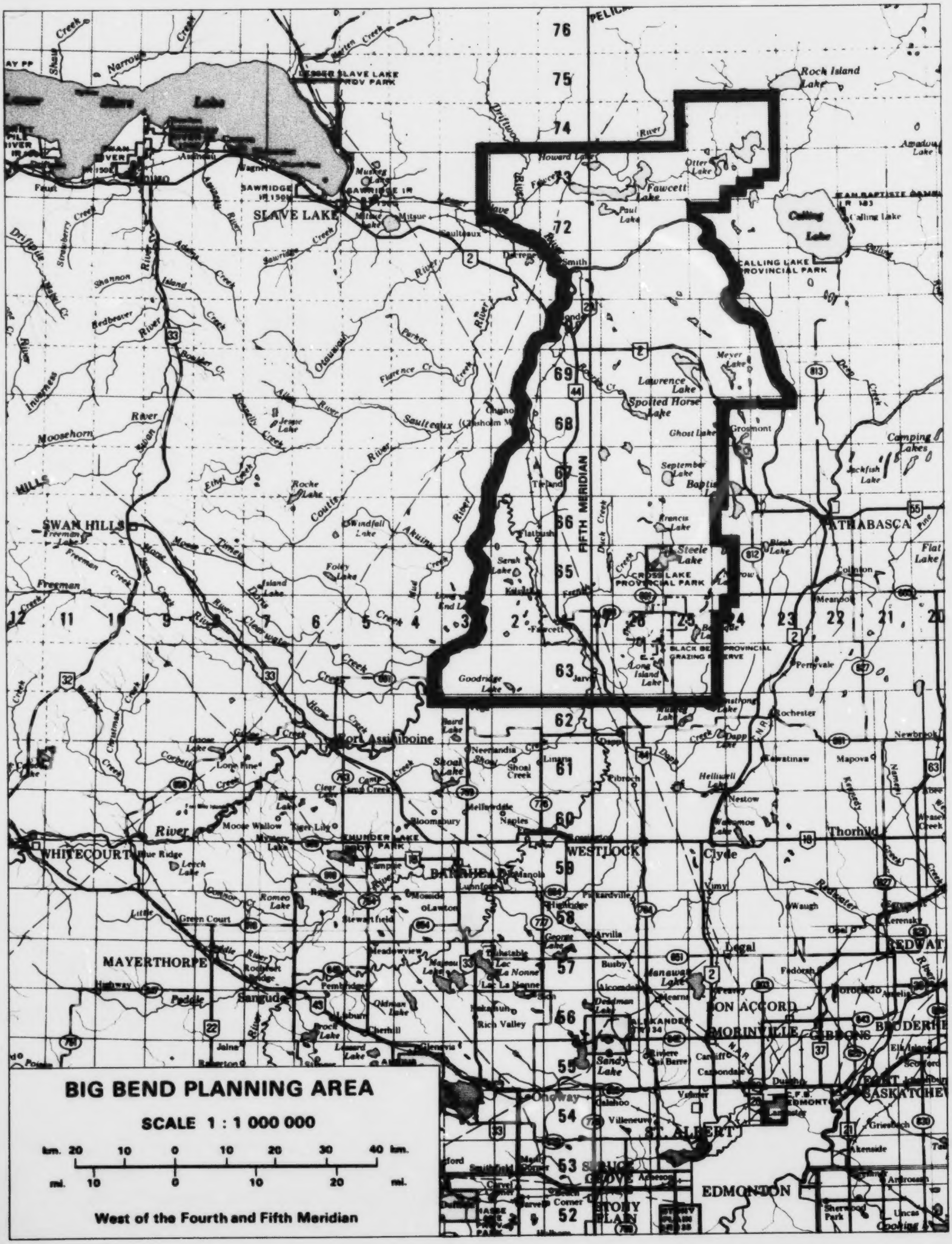

Fig. 1 REGIONAL LOCATION

membership. The planning team consisted of representatives from the AFS, Fish and Wildlife (F & W), and Public Lands (Lands) divisions of Alberta Energy and Natural Resources and from Alberta Agriculture (Agriculture). Now that the plan has been approved responsibility for its implementation rests primarily with the regional directors of the involved agencies (see Implementation, pp 102-105).

In the early stages of the planning process, the team analysed and evaluated the resources of the Big Bend planning area in terms of their capability to sustain use, the present use of and demand for each resource, their potential for future development, and the objectives and policies of the participating agencies. A Planning Proposal was produced along with various background reports (Alberta Energy and Natural Resources, 1977; Luff and Butkovic, 1976; Ward, 1977). Much of this information was summarized in a Background Information Package (February 1978). Based on this assessment the team developed three management options reflecting possible alternative resource use priorities. The Resource Integration Committee (RIC) endorsed an option and given this direction, a Resource Management Policy (Alberta Energy and Natural Resources, 1980) was produced by the team. This document, approved by the RIC in August, 1979, set out a number of broad resource management objectives for various land uses which were spatially defined by means of a zoning scheme.

This document is the culmination of the planning exercise. Broad planning areas, known as Resource Management Areas (RMAs), have been delineated by the planning team and the RIC to reduce logistical problems inherent in attempting to formulate planning provisions for the entire planning area (Figure 2). The RMAs are congruent with, and therefore replace, the zoning designations established in the Resource Management Policy. As a consequence of this approach, each RMA has a distinct management intent in order to reflect differing resource management emphases within the planning area. There is one exception to this approach. An intent to emphasize recreational values in the vicinity of certain lakes was established by means of general recreation zones at the plan policy stage. These zones have been renamed recreation areas and are subsumed within the larger RMAs surrounding them, rather than being dealt with as separate entities.

1.3 Plan Purpose and Jurisdiction

The purpose of the plan is to promote the co-ordinated management of resources within the Big Bend planning area. The plan attempts

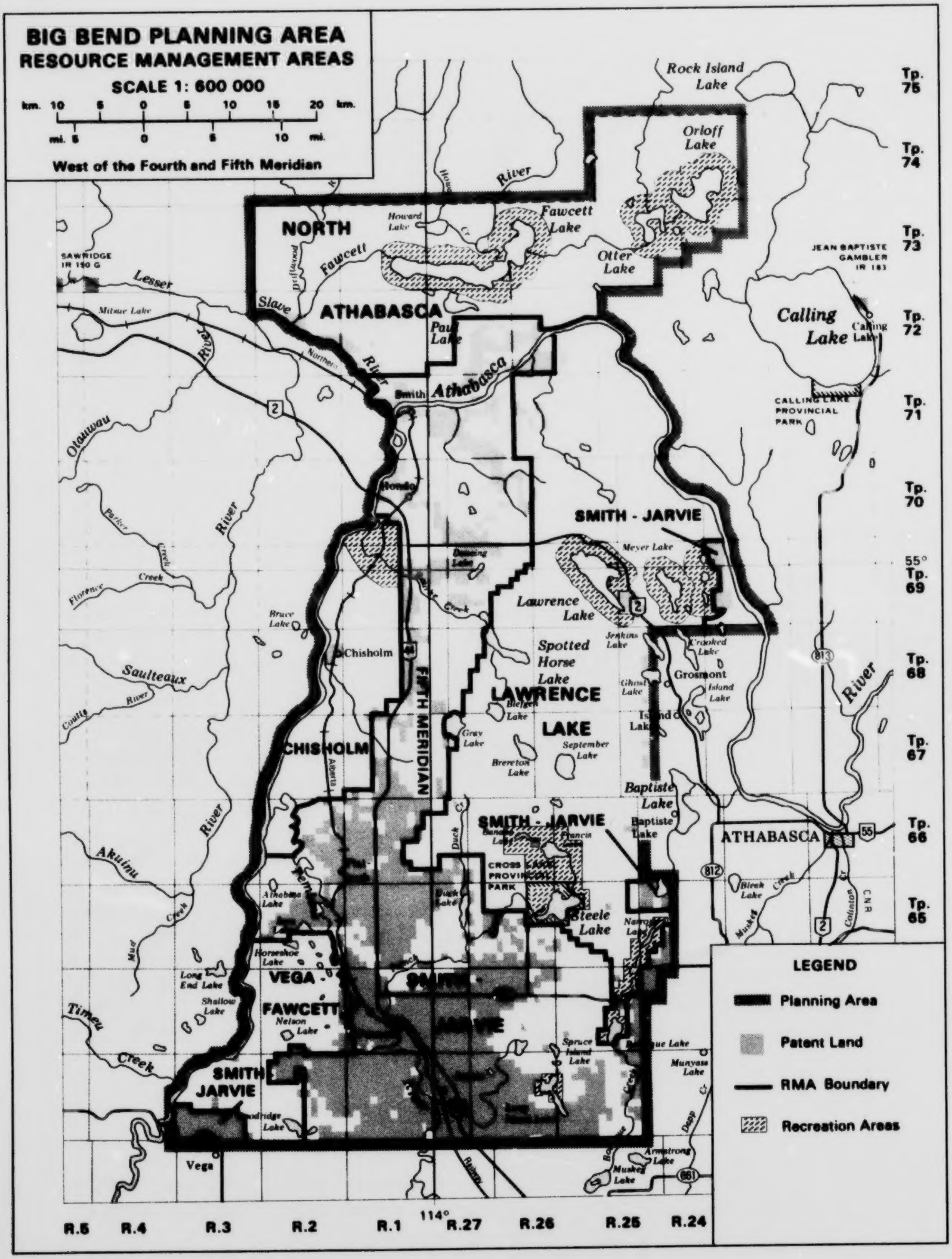

Fig. 2 RESOURCE MANAGEMENT AREAS

to do this by allocating the various resources of the area based on natural resource capabilities and agency requirements, and by providing management direction to these agencies by means of general and specific objectives and guidelines.

A major directed purpose has been to recognize local demand by farmers for agricultural land. The plan recommends that a considerable amount of land eventually be relinquished by the Crown in order to meet the requirements of the local agricultural community.

The provisions of the plan apply to all lands and resources vested in the Crown within the planning area. All resource management conducted by provincial government agencies shall conform to the plan. The plan has no legal status and does not supersede the legislated mandates of any agency. In addition to recommended procedures for review, the plan is subject to revisions or review at any time at the discretion of the associate minister of Public Lands and Wildlife.

The plan has no jurisdiction over patent lands, which are not subject to any of the policies, objectives or guidelines contained herein. Plans affecting private lands are the responsibility of the local municipal authorities (MD 92, County 12 and ID 17) and Alberta Municipal Affairs in accordance with the Alberta Planning Act (RSA, P9, 1983).

2. SUB-REGIONAL POLICY

2.1 Policy Objectives

The Resource Management Policy, endorsed in 1979, contained a number of objectives which express overall government policy toward the sub-region and which acted as a guide for the planning team throughout the subsequent stages of the planning process. These objectives are listed alphabetically below. Some modifications have been made to the original objectives in response to changing circumstances and agency requirements.

Agriculture:

To maintain the significance of the local farming community as a producer of livestock and forage and feed grains by providing opportunities to consolidate existing agricultural areas and to expand onto new lands capable of agriculture.

Fisheries:

To maintain existing fish populations and habitat throughout the planning area while giving priority to the protection of identified areas of important fish habitat.

To provide opportunities for recreational, commercial and domestic uses of fish resources.

Minerals:

To provide opportunities for industry to define the extent of and develop or produce minerals where reserves have been proven.

To provide opportunities for mineral exploration in previously unexplored areas and formations.

Recreation:

To safeguard those recreational resources having the highest recreation potential for the benefit of Albertans.

To focus attention primarily on water-oriented recreation opportunities through both private and public recreation developments.

Timber:

To continue large volume commercial harvesting north of the Athabasca River while maintaining the development of harvesting programs south of the Athabasca River that will meet community demands for timber and, should the need arise, additional deciduous wood supply for the Weldwood Forest Management Agreement.

Wildlife:

To maintain existing wildlife populations and habitat throughout the planning area while giving priority to the protection of identified areas of important wildlife habitat.

To provide opportunities for recreational, commercial and domestic uses of wildlife resources.

2.2 Policy Guidelines

The following guidelines, aimed at environmental quality and conservation practices, were contained in the 1979 Resource Management Policy:

1. In order to ensure the effective conservation of renewable resources, the overall responsibility of all involved agencies shall be to adopt sound conservation management principles in dealing with all resources under their jurisdiction.
2. Upon application by landowner, patent lands having habitat, soil, water or timber conservation value, but of marginal agricultural potential, may be obtained by the Crown by purchase or exchange.

2.3 Policy Emphases

As noted on page 3, the original zoning scheme has been supplanted at the design stage by the use of RMAs. One designation, the Facility Zone, has been discarded. The basic provisions of the plan, however, remain unchanged. A number of emphases were established for the Big Bend planning area at the sub-regional policy level. These emphases are stated below and the areas to which they apply are identified. The intentions expressed for each are elaborated on and given additional focus and direction in the Resource Management Areas chapter, beginning on page 9.

Agricultural Emphasis -- Applicable to the Smith-Jarvie RMA and portions of the Lawrence Lake RMA to the north of Highway 2.

Requirements of the local farming community for till cropping and grazing lands will be given the priority of use in the Smith-Jarvie RMA. An expansion of the agricultural land base will take place north of Highway 2 in the Lawrence Lake RMA creating opportunities for both till cropping and large-scale improved grazing. In the multiple use RMAs, opportunities for both improved and unimproved grazing will be provided.

Environmental, Fisheries and Wildlife Emphases -- These resources will be given the priority of use in portions of all RMAs when the resource values are particularly significant or sensitive to development.

Minerals Emphasis -- Minerals exploration and development activities will take place throughout the planning area, with the focus of activity on existing natural gas fields. Some restrictions will exist in areas priorized for environment, fisheries, wildlife and recreation resources.

Timber Emphasis -- Applicable to the North Athabasca, Chisholm and Lawrence Lakes RMAs.

Large-scale sustained yield commercial coniferous timber harvesting will be given the priority of use in the North Athabasca RMA. In the other two RMAs, the emphasis will be on satisfying local community timber requirements. Where supplies are available, both the Smith-Jarvie and Vega Fawcett RMAs will also supplement local community timber supply requirements.

Recreation Emphasis -- Applicable to recreation areas in the vicinity of Rourke Creek, Long, Long Island, Narrow and Bolloque Lakes (as depicted on the Resource Management Areas map in the rear folder) and to the recreation areas surrounding Banana, Chain, Fawcett, Francis, Lawrence, Meyer, Orloff and Otter Lakes (applicable to a distance of 1.6 km from the shorelines).

These areas will accommodate a variety of extensive and intensive recreation developments.

3. RESOURCE MANAGEMENT AREAS

Five RMAs have been identified in the Big Bend planning area: Vega-Fawcett, Chisholm, North Athabasca, Lawrence Lake and Smith-Jarvie.

3.1 Generally Applicable Management Objectives and Guidelines

In the course of developing planning provisions on an RMA-specific basis, the planning team identified both management objectives and management guidelines which are generally applicable. Not all resources are affected by generally applicable objectives and/or guidelines. The following list contains those objectives and guidelines which apply to the entire planning area.

AGRICULTURE

Management Objective

To ensure that accelerated erosion and long-term reductions in water quality are minimized during range improvement operations.

Management Guidelines

1. The impact of industrial access through grazing areas will be minimized by restricting the number of route locations.
2. Unimproved grazing may be allowed in sustained yield timber harvesting areas subject to restrictions or modifications determined necessary by detailed operational planning in order to ensure successful timber regeneration.
3. Development of any improved grazing program will take place on an integrated basis, requiring the consultation of all involved

government agencies. The design and regulation of improved grazing sites will be modified where practical to maintain or enhance wildlife habitat.

4. Range improvement and grazing operations will be modified to minimize soil erosion and effects on the environment through such techniques as:

   - -- minimizing the length of time between clearing or cultivation re-seeding;
   - -- selectively reducing the intensity of grazing;
   - -- ensuring that an appropriate grass cover remains at the end of the season;
   - -- utilizing special varieties of forage;
   - -- employing livestock distribution measures; and
   - -- fencing off sensitive areas.

CULTURE

Management Objectives

1. To protect historic resources (historical, prehistoric, and palaeontological) from impacts associated with development.

2. To provide opportunities for the scientific, educational and recreational use of historic resources.

Management Guideline

Resource uses causing surface disturbance may require historical resource impact assessments before develoment occurs, as outlined in the Alberta Historical Resources Act (RSA, H8, 1980).

FISHERIES

Management Objectives

1. To maintain the current level of sustained annual production of fish for domestic, recreational and commercial use.

2. To maintain the habitat and quality of lakes and streams for the continued production of fish, recognizing the importance of all water bodies which support fish populations because of the relatively limited amount of fish habitat in this area.

Management Guidelines[1]

1. Man-made structures such as bridges, culverts and weirs must not delay or block the natural spawning and/or feeding migrations of fish.

2. Spawning and rearing habitat must be protected from siltation, mechanical removal or drainage, in order to ensure successful reproduction and annual recruitment to the fish population. Fish spawning and rearing habitat includes:

   -- sandy/rocky stream bottoms and lake beaches;
   -- shallow marshes, sloughs and flooded meadows adjacent to lakes and streams; and
   -- aquatic macrophytes within lakes and streams.

3. Erosion and nutrient runoff must be controlled throughout the area in order to ensure water of sufficient quality for the propogation of the native fish species. This can be accomplished by appropriate planning of resource developments and protection of natural vegetation buffers between the water and potential problem activities such as cattle grazing, cattle feeding operations, cultivation of crops, shoreline disturbance such as cottages and recreation facilities, and road developments associated with resource use or extraction. Erosion control measures will be required along access roads.

4. Resource development will be restricted in areas containing important fish habitat. These areas are listed under individual RMA guidelines.

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[1] The first three guidelines indicate the Canadian legal requirements of protecting fish habitat as outlined in Sections 31(1), 31(5) and 33(2) of the Fisheries Act of Canada, (Revised Statutes of Canada, 1970). Specific restrictions are provided in F & W's Fisheries Habitat Protection Guidelines.

5. The sport fishery is critical to the successful development of the recreational intent of the various lake recreation areas and will be maintained or enhanced wherever feasible, as necessary.

INFRASTRUCTURE

Management Objectives

1. To meet industrial access requirements associated with natural resources development while recognizing wildlife and environmental values.

2. To allow the development of the necessary industrial facilities to service the natural resources programs.

3. To permit linear utilities such as electrical transmission lines, while recognizing environmental and wildlife constraints.

4. To permit subdivision on Crown land only for the purposes of cottage development and/or facility-based small-scale commercial recreation developments[2].

Management Guidelines

1. Development of industrial access will be dependent on resource development requirements and will take place subject to constraints and recognized opportunities posed by other industrial resource users i.e. multiple access use will be encouraged.

2. Temporary access routes required during certain phases of industrial development will be reclaimed as required.

3. Any subdivision for the purposes of cottage development and/or facility-based, small-scale commercial recreation developments must be in accordance with the approved land use plans of the appropriate local municipality authority.

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[2] This objective has no effect on existing subdivision procedures on patent lands.

MINERALS

Management Guidelines

1. Surface disturbances associated with minerals resource developments will be kept to a minimum.

2. Conditions will be imposed on the development of aggregate and quarriable mineral resources in order to minimize impacts on the total area disturbed, soil stability and aesthetic values. Such measures will include, but are not limited to, establishing limits on the number of working faces and requiring progressive reclamation.

RECREATION AND TOURISM

Management Objective

1. To encourage the provision of a diverse range of private and public sector water-based tourism and recreation facilities, attractions, accommodation types and services capable of meeting increasing demands for leisure opportunities on a year round basis.

Management Guidelines

1. Areas intended for public recreation developments are not intended to preclude private sector initiatives as limited facility-based small-scale commercial recreation developments are permitted, excepting those areas specified in particular RMAs, subject to wildlife and environmental constraints. Also, the private sector may be instrumental in developing public sector recreational facilities.

2. Approval of proposals for commercial recreation developments will require the submission of General and Detailed Recreation Plans.

3. No dispositions will be made for commercial recreation programs requiring large-scale facility development.

4. The establishment of recreational off-highway vehicle (OHV) trails should avoid active portions of registered traplines and be developed in consultation with the trapper.

5. Off-highway vehicle (OHV) use restrictions will be imposed as required in the vicinity of areas of industrial activity and reclamation sites. Restrictions may include, but are not limited to:

   -- time restrictions on use;
   -- the fencing off of specific sites; and
   -- the provision of designated trail locations.

6. Hunting will be permitted in all recreation areas, but will be subject to periodic review in the vicinity of intensively used sites.

TIMBER

Management Objectives

1. To manage the timber land base to ensure a supply of timber on a sustained yield basis to meet industrial and community needs.

2. To ensure that the adverse impacts of timber harvesting operations on the quality of fish and wildlife habitat are minimized.

3. To ensure that accelerated erosion and long-term reductions in water quality are minimized during timber harvesting operations.

4. To bring mistletoe-infected stands back to a healthy and vigorous condition.

5. To protect the timber resource from destruction by fire, insects or disease.

Management Guidelines

1. Existing operating conditions as described in the Timber Harvest Cut Block Design Manual will be retained. In addition, wildlife habitat and environmental values will be recognized through modification of these conditions when found necessary through AFS/Fish and Wildlife consultation.

2. Reforestation techniques and intensive forest management practices will be modified in consultation with F & W to maintain or enhance habitat and protect environmental values.

3. Continued productivity of forest land will be ensured through:

   -- application of intensive forest management techniques;
   -- reclamation of surface disturbances; and
   -- reforestation of harvested stands according to established policy.

4. Where possible, access necessary for timber harvesting will require joint development and use by the various forest products companies and by other industrial users such as petroleum and natural gas companies.

5. Sanitation or salvage logging, harvesting of overmature trees and cutting necessary for recreation programs will be allowed in designated buffer areas surrounding lakes and other recreation developments.

6. There will be no major reductions in annual allowable cut (AAC) as a result of resource development prohibitions or modifications necessary to ensure the protection of important habitats.

WATERSHED

Management Objectives

1. To minimize soil erosion caused by industrial and agricultural land use activities.

2. To maintain the water quality and quantity of streams and lakes at an acceptable level.

Management Guidelines

1. Industrial, agricultural and recreational activities along the Athabasca and Pembina Rivers will require additional regulations to prevent erosion.

2. Adequate water levels and flows must be maintained to match the cycles with which the fish have evolved and to which they have adapted.

3. Water control structures have been placed in Fawcett Lake and the Fawcett River to regulate water levels and flow regimes. These structures will be maintained and others may be added provided the recreation value and fish and wildlife habitat values are maintained at an acceptable level.

4. Livestock use along lakes and streams will be regulated in areas where soils are easily disturbed or water may become contaminated.

5. Current operating guidelines regarding erosion prevention will be followed.

WILDLIFE

Management Objectives

1. To maintain wildlife habitat and ensure the retention of viable populations of ungulates, upland and migratory birds, furbearers, and other wildlife species and to ensure that appropriate use is made of these resources.

2. To maintain a mosaic of native habitats suitable for wildlife in areas which undergo a major land use change - such as agricultural expansion.

Management Guidelines

1. Resource development will be restricted in areas containing important wildlife habitat. Resource development may be prohibited where necessary to ensure the maintenance of populations of rare, threatened or endangered species of wildlife or where the area is critical to the survival of a local wildlife population. Areas where resource development is prohibited will be determined through agreement between the involved agencies. Prohibitions on resource development will be used to protect such sites as raptor nests, heron colonies or other localized critical habitats. The areas of important habitat identified

to date are listed under individual RMA guidelines; subsequently identified areas will, upon agreement of the involved agencies, be subject to this guideline. It will be necessary to conduct field surveys to determine the nature and extent of these areas and to delineate additional areas in which resource activity may be restricted or prohibited.

2. OHV use restrictions may be required during hunting seasons to ensure the quality of the hunting or recreation experience.

3. Conflicts among trappers and other users of recreation areas will be reduced through consultation with trapline holders during the detailed operational planning and development of recreation facilities and, where possible, by locating facilities and trails away from traplines.

4. Trappers' cabins should not be located inside recreation areas as cabins are generally incompatible with the recreational intent of these areas. This guideline does not affect existing cabins in these areas and trapping is recognized as a legitimate activity in all recreation areas.

5. Shoreline and backshore habitat is important for aquatic furbearers and direct shoreline access for recreation program will be limited.

RMA-Specific Management Objectives and Guidelines

Each RMA is characterized by a short management intent statement which ranks the resource management priorities intended for that area. These priorities are reflected in the plan's management objectives and management guidelines, which are organized on a resource-specific basis for each RMA. Management objectives are intended to express the short- and medium-term approach toward achieving the broader objectives identified for the entire planning area. Management guidelines express the way in which management objectives are going to be achieved and also are intended to ensure the effective integration of government resource management objectives.

The organizational format for each RMA is the same. A brief introductory preface gives capsule information on size, geographical features, topography, surficial geology and settlement features. This is followed by the statement of management intent. On the same page, an outline map illustrates the location of the RMA in relation to the planning area as a whole and contains basic information on places and features referred to in the text which follows. Resources are dealt with alphabetically. Resource management emphases expressed in the management intent statements are reflected in the provisions of the plan. Short resource introductory statements precede the management objectives and guidelines in each case and give a synopsis of the status of the resource -- its present use and planned use direction.

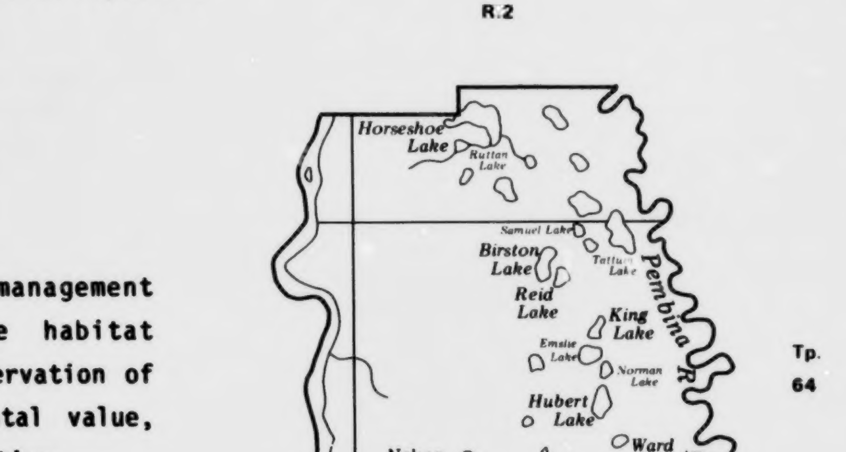
3.3 VEGA - FAWCETT AREA

INTRODUCTION

The small Vega-Fawcett RMA is located in the extreme southwest corner of the study area. The Athabasca River to the west and the Pembina River to the east are the most notable natural features. This is an area of low-lying topography containing numerous small lakes and extensive areas of muskeg interspersed with alluvial and aeolian deposits.

MANAGEMENT INTENT

Multiple use management emphazing wildlife habitat interests, the preservation of lands of environmental value, and watershed protection.



Agriculture

The land base within the area is generally not suitable for producing crops. There are at present a number of grazing leases affecting several sections of land at various locations on the periphery of the area. Small pockets of land adjacent to the Athabasca River in the northern and southern portions of the areas are most suited for range, but the potential is not high. Virtually the entire RMA is unsuited for improved grazing development.

Management Objective

To provide Crown land dispositions only for unimproved grazing purposes, while recognizing wildlife habitat and environmental values.

Management Guideline

No Crown land dispositions will be made for till cropping or improved grazing purposes.

Fisheries

This area has limited fisheries potential. Only the Athabasca and Pembina Rivers (and their larger tributaries) support game fish populations. The most important species are pike and walleye, but goldeye and mountain whitefish also occur. The lakes in the area are small and shallow and have severely limited fisheries potential. There is no commercial fishery in this RMA.

Fishing for walleye and pike in the rivers is popular during spring spawning periods. Fishing pressure may increase as access to the rivers improves.

Management Objectives

See generally applicable fisheries management objectives on pp. 10-11.

Management Guideline

Restrictions on resource development may be applied in order to ensure the maintenance of important fisheries habitat in the Athabasca and Pembina Rivers.

Infrastructure

The Vega-Fawcett RMA is essentially unserviced. Access is provided to a limited portion of the area by industrial roads and trails.

There is no residential development in the RMA. There are a limited number of gathering systems for the natural gas resources of the area.

Other than for industrial access and development purposes, there will be limited expansion of infrastructure facilities.

Management Objectives

See generally applicable infrastructure management objectives on page 12.

Management Guideline

No public recreational access programs are envisioned.

Minerals

Mineral resource development has focused on petroleum and natural gas exploration and development. Petroleum and natural gas dispositions cover 86 per cent of the area, while natural gas fields cover 42 per cent. There are 10 capped natural gas wells, but no producing wells. There are portions of four natural gas fields, but no gas plants or any major pipelines in the RMA. Natural gas has not been produced from the area and no petroleum has been found. Reserves of natural gas at the beginning of 1982 were 678 X 10^6 m^3. The potential for coal, quarriable and metallic minerals, and aggregate development is low.

Management Objective

To provide opportunities for industry to explore and develop the mineral resources of the Vega-Fawcett RMA.

Management Guidelines

See generally applicable minerals guidelines on page 13.

Recreation

Intensive recreation opportunities in the Vega - Fawcett RMA are restricted by poor access and the low-lying swampy nature of much of the land. The area is well suited for extensive recreational use because of the large number of small lakes and the attractive valleys of the Athabasca and Pembina Rivers. The various trails and seismic lines facilitate OHV use, but pose a potential source of conflict with wildlife and other recreation users.

Management Objective

To ensure continued opportunities for extensive recreation activities providing both for wildland recreation experiences and mechanized recreation activities such as OHV use.

Management Guidelines

1. In keeping with the extensive recreation focus, provincial government agencies will not provide public recreation developments in this area.
2. OHV access restrictions will be imposed as required to prevent or mitigate conflicts with non-mechanized recreation activities.

Timber

Much of the Vega-Fawcett RMA is covered with treed muskeg and brush and has poor forest capability.

The best forest growth parallels the Athabasca River and the northern boundary of the RMA. Timber growth in these areas is predominantly coniferous regeneration interspersed with deciduous stands. There are very few stands of merchantable coniferous timber.

Present timber use is mostly for fuelwood, posts and rails. This area has little potential for production of sawlog timber except in a few scattered merchantable stands.

Management Objective

To meet community needs for coniferous and deciduous timber through sustained yield timber management.

Management Guideline

Timber sales should be limited to small short-term dispositions such as Local Timber Permits (LTPs), Commercial Timber Permits (CTPs) and Deciduous Timber Permits (DTPs).

Wildlife

There is good moose habitat in the valleys of the Pembina and Athabasca Rivers, but the rest of the area is only poor to fair moose habitat. There are an estimated 70 moose and 60 deer in this RMA; about 10 moose and 18 deer are harvested annually by recreational hunters (250 and 495 hunter-days of recreation for moose and deer respectively).

There is important aquatic furbearer habitat on lands surrounding the many small lakes which lie in an irregular arc along the eastern side of the RMA from Horseshoe Lake in the north to Ward and Nelson Lakes in the south. The potential annual yield of fur in this RMA is estimated to exceed $41 000 (1983 dollars/prices), but it is unlikely that this level of production will be reached since the more productive species (especially squirrel, beaver and muskrat) are generally underharvested.

There is a great blue heron colony on Hubert Lake.

Wildlife populations in the area have not been greatly affected by human activity since access is poor and there has been little resource development. The Athabasca and Pembina Rivers are popular big game hunting areas and, as access improves, it is anticipated that hunting pressure in this area will increase.

Management Objective

To maintain populations and harvests of wildlife to at least the present level and, where possible, increase populations and harvests through appropriate management techniques.

Management Guidelines

1. Unimproved grazing, access and utility developments, minerals exploration and development activities, timber harvesting and other forest management activities, along with other resource developments, may be restricted or modified to ensure the maintenance of areas of important habitat and environmental value[3] on lands within the breaks of the Pembina and

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[3] In the interest of minimizing repetition, reference to areas of environmental value (see Glossary) is housed under the first Wildlife guideline in each RMA.

Athabasca Rivers and lands surrounding the many small lakes which lie in an irregular arc along the eastern side of the RMA from Horseshoe Lake in the north to Ward and Nelson Lakes in the south.

2. The great blue heron colony located on Hubert Lake is recognized as critical habitat. Resource development and other activities may be prohibited within a designed area around this colony. This area is to be delineated through a detailed analysis by the Fish and Wildlife Division as part of the operational follow-up to this plan.

3. Big game management will focus primarily on moose and deer.

4. Emphasis on furbearer management will be placed on aquatic furbearers in the Horseshoe-Nelson Lakes area.

3.4 CHISHOLM AREA

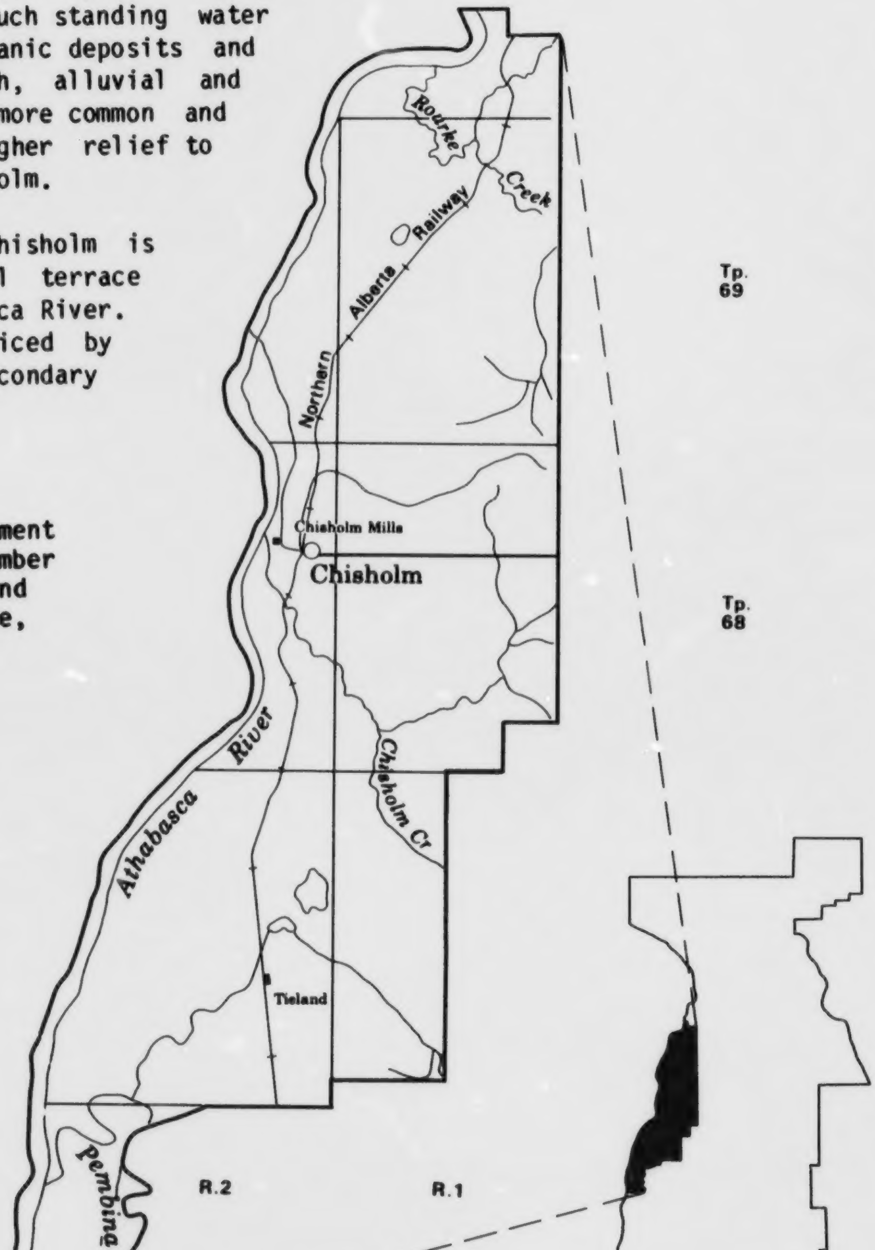
INTRODUCTION

The Chisholm area is approximately 325 km^2 in size. The entire western boundary is demarcated by the Athabasca River. Three other water courses joint the Athabasca in this area: the Pembina River in the extreme south; Chisholm Creek in the central portion of the area; and Rourke Creek in the north. The southern portion of the RMA is low-lying with much standing water and is dominated by organic deposits and muskegs. In the north, alluvial and aeolian deposits are more common and there is an area of higher relief to the north east of Chisholm.

The hamlet of Chisholm is situated on an alluvial terrace overlooking the Athabasca River. The community is serviced by the CN railway and a secondary road.

MANAGEMENT INTENT

Multiple use management with sustained yield timber harvesting, year - round extensive recreation use, small - scale improved grazing and petroleum and natural gas exploration and development.



Agriculture

The majority of lands with till cropping and improved grazing capability are located in the central portion of the RMA - throughout much of Twp 68, Rge 1, W5 and in the southeast part of Twp 69, Rge 1, W5.

There are a number of grazing leases in the area, and it is anticipated that the demand for grazing dispositions will continue.

Management Objectives

1. To disallow till cropping.

2. To meet local needs for supplementary grazing for domestic livestock production by permitting improved and unimproved grazing programs, except in the Rourke Creek recreation area, while recognizing wildlife habitat, environmental values and modifications necessary to accommodate timber interests.

Management Guidelines

1. No Crown land dispositions for till cropping purposes will be made.

2. Dispositions for grazing purposes will not be made in the Rourke Creek recreation area.

3. Improved grazing may be allowed in coniferous timber harvesting areas subject to restrictions or modifications determined necessary by detailed operational planning in order to ensure that any impacts on sustained yield timber management are not significant.

4. No Crown land dispositions for improved grazing purposes will be made in areas of important wildlife habitat and environmental value on lands within the breaks of the Athabasca River and lands in the vicinity of the confluence of the Pembina and Athabasca Rivers.

Fisheries

The Athabasca and Pembina Rivers and their tributaries are the only water bodies in the area with any fisheries potential. These areas are fished during the spring walleye and pike spawning runs. The tributary streams to the Athabasca, such as Rourke Creek, are used by spawning walleye. Goldeye, mountain whitefish and arctic grayling occur in the rivers and some tributary streams.

Management Objectives

See generally applicable fisheries management objectives on pp. 10-11.

Management Guidelines

1. Restrictions on resource development may be applied in order to ensure the maintenance of important fisheries habitat in the Athabasca and Pembina Rivers and Rourke Creek.

2. Rourke Creek is an important spawning creek for pike and walleye and will require detailed operational planning of the recreation facility development in order to limit siltation and maintain water quality and flow.

Infrastructure

This RMA has a mix of infrastructure development providing essential residential and industrial access and servicing. The main access linkages are the CN railway line which passes through the area and the secondary road which links the hamlet of Chisholm with Highway 2. There are also some industrial roads and trail systems. The hamlet of Chisholm is the area's residential centre and has full utility services.

Infrastructure will only be developed to the extent necessary for natural resources management and recreation development.

Management Objective

To provide public access and the necessary utility development requirements to the proposed recreation developments in the Rourke Creek recreation area.

Management Guidelines

1. All permanent access routes within the Rourke Creek recreation area will meet recreation design standards necessary to deliver the recreation programs developed for the area.

2. Detailed operational planning for the recreation area will determine the extent and location of any necessary roads.

3. Access within the Rourke Creek recreation area will cater to regular vehicular traffic as well as snowmobiles and trail bikes.

4. Development of major utility corridors will be restricted in the Rourke Creek recreation area. The existing utilities lines along the railway, any service requirements for recreation facilities and natural gas gathering systems, are not affected by this guideline.

5. Any industrial access will be developed in a manner consistent with the protection of high recreation values in the Rourke Creek recreation area.

Minerals

Minerals resource development has focused on petroleum and natural gas exploration and development. Petroleum and natural gas dispositions cover 88 per cent of the RMA, while natural gas fields cover 65 per cent. There are 18 producing wells and 37 capped gas wells. There are portions of three natural gas fields, one gas plant, and 75 km of major petroleum and natural gas pipelines in the area. Natural gas production in 1981 was 129 X 10^6 m^3 (value at $12 million), while natural gas reserves were 1 338 X 10^6 m^3. No petroleum has been found. The potential for coal, quarriable and metallic minerals, and aggregate development is low.

Management Objective

To provide opportunities for industry to explore and develop the mineral resources of the Chisholm RMA.

Management Guidelines

Restrictions will be selectively placed on minerals exploration and development activities in the vicinity of recreation facilities in the Rourke Creek recreation area. Any modifications will require operational review at the time of development to ensure that recreation values are maintained. Modifications may involve, but are not limited to:

- hand cleared lines;
- avoidance of recreational facilities;
- restrictions on or the exclusion of minerals exploration and development activities in defined areas;
- seasonal time allotments on development activities;
- restrictions on the extent, location and type of gathering and production systems; and
- special reclamation standards.

Recreation

Much of the Chisholm RMA is relatively inaccessible, providing opportunities for extensive recreational uses. In the vicinity of Rourke Creek and adjacent to the Athabasca River in the northern part of the RMA, recreation inventories have identified high scenic values and a suitability for both land and water-oriented recreational uses. As this area is relatively close to Highway 2, the potential for some facility development exists in this location.

Management Objectives

1. To create opportunities for year-round use of the Rourke Creek recreation area by providing recreation developments and opportunities catering to a wide spectrum of land and water-oriented recreational uses.

2. To permit the use of OHVs, making special provision for snowmobiles and trail bikes in the Rourke Creek recreation area.

3. To ensure continued opportunities for extensive recreation activities providing wildland recreation experiences.

Management Guidelines

1. Dispositions for limited facility-based small-scale commercial recreation developments only will be permitted within the Rourke Creek recreation area in order to create opportunities for the possible development of a camp/staging area for guided canoeing/rafting trips on the Athabasca River.

2. OHV access restrictions will be imposed as required to prevent or mitigate conflicts with non-mechanized recreation activities; to reduce impacts on wildlife populations; and to ensure the retention of environmental values and the protection of important wildlife habitat on lands within the breaks of the Athabasca River and lands in the vicinity of the confluence of the Athabasca and Pembina Rivers.

3. In the Rourke Creek recreation area trail systems for snowmobiles and trail bikes will be designed to:

-- provide for loops within the general recreation zone as well as integration with larger routes, including a possible Athabasca River loop;
-- minimize impacts on wildlife habitat along Rourke Creek; and
-- incorporate user facilities.

4. A boat launching facility will be developed at the mouth of Rourke Creek. This facility will be incorporated with other recreation facilities planned for the area.

5. The critical habitat along Rourke Creek will be recognized in the design and location of all recreation developments.

6. In the Rourke Creek recreation area:

   -- General and Detailed Recreation Plans will be prepared prior to any development of campgrounds or other recreation facilities in order to ensure an appropriate phasing and integration of other resource uses such as forest harvesting;

   -- the potential for interpretive facilities or programs focusing on other resource uses such as timber harvesting, trapping and minerals exploration and development will be assessed; and

   -- final delineation of the recreation area boundary will be determined at the operational level.

Timber

The forest cover is mainly immature aspen with merchantable coniferous timber stands established near Chisholm and east of the Athabasca River toward Tieland. There are also scattered merchantable coniferous stands near Rourke Creek. Muskeg and pine-covered ridges are located throughout the RMA.

The coniferous timber is administered under a Community Farm Woodlot Plan and is second in importance to the Lawrence Lake RMA for community timber yield. Past timber harvesting was concentrated east of Chisholm and will be centered in this area in the future. Demand for posts, rails and fuelwood is steady in this RMA.

Coniferous timber in this RMA will contribute to the AAC of that portion of the planning area south of the Athabasca River. The current AAC for community is 1 310 000 board feet (5 620 m^3), but a five-year demand study has indicated a shortfall of 3 100 000 board feet (13 310 m^3) per year for community needs. Timber from the Chisholm RMA will contribute to making up the shortfall.

To date, demand for deciduous timber in this RMA has been low. However, it is expected to rise, especially if Weldwood of Canada includes the Lawrence Lake RMA in the wood source for the proposed deciduous FMA, thereby increasing pressure on the Chisholm RMA to satisfy community timber demand.

Deciduous timber in the Chisholm RMA will contribute in part to the 2 100 000 board feet (9 010 m^3) AAC reserved for community use in that portion of the planning area south of the Athabasca River.

Management Objectives

1. To meet community needs for coniferous and deciduous timber through sustained yield timber management.
2. To provide increased level of fire protection due to the extensive nature of recreation in the Rourke Creek recreation area.

Management Guidelines

1. Timber sales will be limited to small short-term dispositions such as LTPs, CTPs and DTPs.

2. A 400 m buffer strip will be left around all developed trail systems in the Rourke Creek recreation area. The buffers may be modified through timber cutting for sanitation, salvage and recreation development. Such cutting will be in accordance with General and Detailed Recreation Plans.

3. When the Rourke Creek recreation area is developed to or approaching its full extent, compensating protection measures will be taken to prevent increased fire occurrence.

Wildlife

There are key wintering areas along the valleys of the Athabasca and Pembina Rivers. Most of the remaining area is, however, only poor to fair moose habitat. There are an estimated 130 moose and 75 deer in this RMA; these provide an estimated harvest of 19 moose and 22 deer to recreation hunters (475 and 605 hunter days for moose and deer respectively) as well as an estimated subsistence harvest of 10 moose and 15 deer. There is an isolated population of elk near the confluence of the Athabasca and Pembina Rivers. There is no sport-hunting season for elk, but treaty Indians take an estimated five elk per year in the Flatbush area.

This RMA has an estimated potential annual production of more than $60 000 worth of fur (1983 dollars/prices), although it is unlikely this level of production will be reached since the more productive species (particularly squirrel) are generally underharvested. The Rourke Creek drainage is a productive furbearer area; river otters are occasionally trapped in the upper part of the creek.

This area has an estimated annual harvest of about 1 200 grouse, providing 620 days of recreation hunting.

The area is a popular destination for both big game and upland game hunters. It is anticipated that this area will continue to sustain high levels of hunting.

Management Objective

To maintain populations and harvests of wildlife to at least the present level and, where possible, to increase populations and harvests through appropriate management techniques.

Management Guidelines

1. Unimproved grazing, access and utility developments, minerals exploration and development activities, timber harvesting and other forest management activities, along with other resource developments, may be restricted or modified to ensure the maintenance of areas of important habitat and environmental value which exist on lands within the breaks of the Athabasca

River; lands in the vicinity of the confluence of the Pembina and Athabasca Rivers; and lands in the vicinity of Rourke Creek.

2. Rourke Creek will receive specific designation as critical wildlife habitat. Developments in the immediate vicinity of Rourke Creek will require detailed examination at the operational level prior to approval.

3. An information and educational service should be provided to recreational users to increase their awareness of trapping activities within the Rourke Creek recreation area.

4. The intent of the Rourke Creek area is for year-round recreation, and it is anticipated that recreational use may conflict with trapping activity as the area is developed. Every effort for co-ordination and management of these two legitimate resource uses will be made.

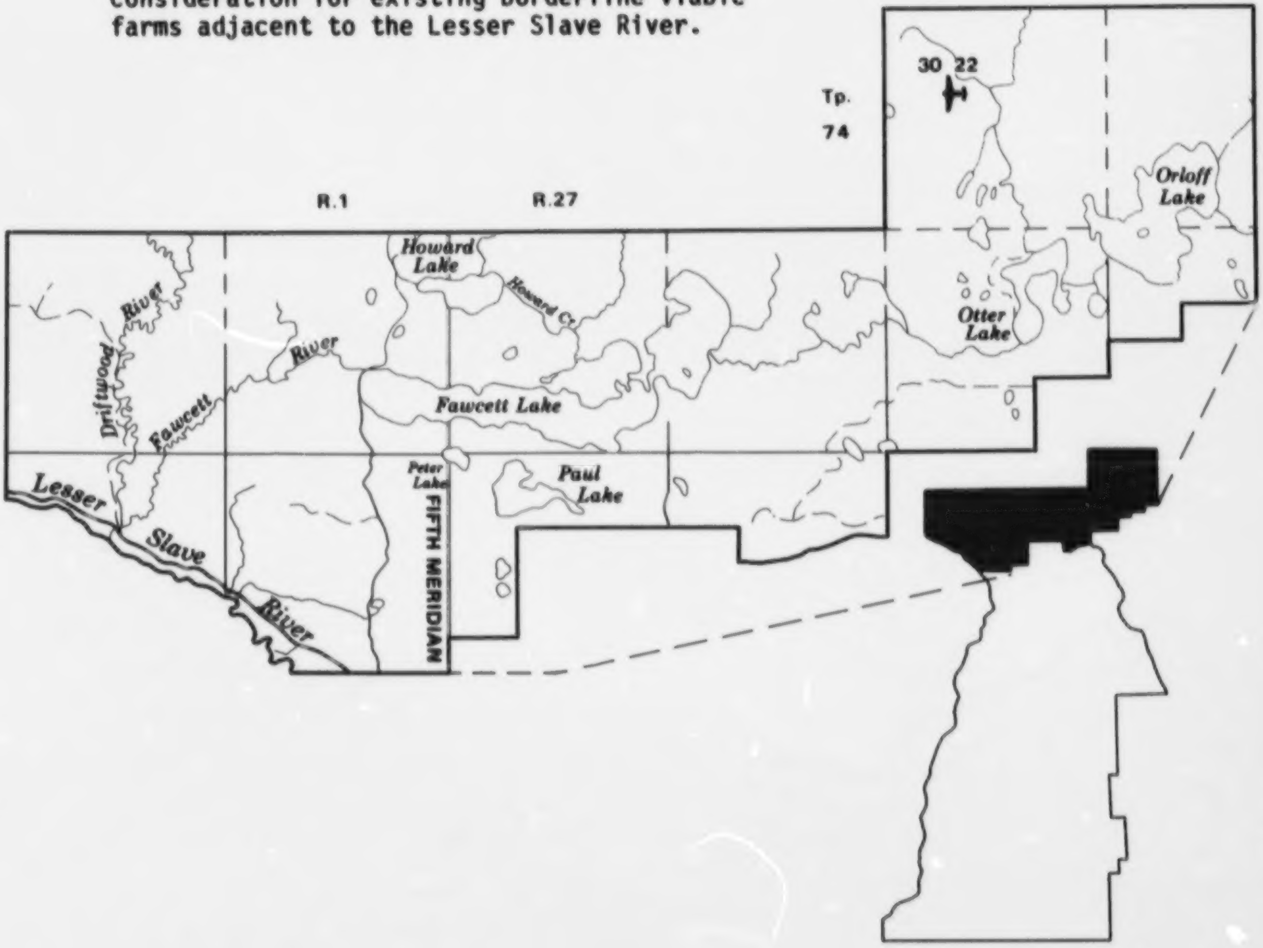
3.5 NORTH ATHABASCA AREA

INTRODUCTION

The North Athabasca area covers approximately 885 km^2. Low-lying muskegs in the west give way to higher ground in the north, central, and eastern areas. Surficial geology is dominated by a mixture of till and organics. The RMA contains numerous waterbodies of varying size - Fawcett, Orloff and Otter Lakes are the largest. Both the Lesser Slave and Athabasca Rivers mark portions of the southern boundary and the Driftwood and Fawcett Rivers drain the western and north central parts of the area. Secondary Highway 2A parallels the Lesser Slave River and two gravelled roads service the Fawcett Lake Area.

MANAGEMENT INTENT

Multiple use management with sustained yield commercial timber harvesting, intensive and extensive water-oriented recreational uses, and petroleum and natural gas exploration and development. Agricultural development opportunities will be generally limited to unimproved grazing with some localized special consideration for existing borderline viable farms adjacent to the Lesser Slave River.



Agriculture

This RMA contains lands suitable for improved grazing, particularly in the vicinity of Paul Lake and east of Fawcett Lake. Small pockets of land suitable for crop production lie south and southwest of Paul Lake.

There are some grazing dispositions in the area, particularly along the southern portion. It is anticipated a demand for grazing dispositions in the North Athabasca area will continue.

Management Objectives

1. To recognize the priority of timber interests in this RMA by providing Crown land dispositions only for unimproved grazing purposes, while recognizing recreation interests, wildlife habitat, and environmental values.
2. To encourage the viability of existing farm units only adjacent to the Lesser Slave River.

Management Guidelines

1. Designated lands adjacent to existing farm units in the vicinity of the Lesser Slave River (Figure 3) will be examined on a one on one basis with current landowners. Where suitable and necessary, dispositions for improved grazing or till cropping will be issued on designated adjacent quarter sections. In extenuating cases, a sale option may be considered.
2. No Crown land dispositions will be made for till cropping or improved grazing purposes.
3. All unimproved grazing programs require recognition of sustained yield timber harvesting.
4. Dispositions for unimproved grazing programs will not be made in the Orloff and Otter Lakes recreation areas.
5. Dispositions for unimproved grazing purposes will not be made within 400 m of Fawcett Lake or within the immediate vicinity of established recreation sites, except if otherwise provided for in a Lake Shoreland Management Plan.

Fisheries

Fawcett and Orloff Lakes support populations of walleye, northern pike, perch, lake whitefish and tullibee. Active sportfisheries for walleye and pike exist on these lakes, while commercial fisheries harvest primarily lake whitefish and tullibee. Otter Lake, a few of the smaller lakes and the larger streams in the area have game fish populations.

The lakes in this RMA are estimated to have a potential annual harvest of 34 000 kg of tullibee, 20 000 kg of lake whitefish, 13 888 kg of pike and 4 343 kg of walleye. This harvest could provide an estimated 40 000 recreation days of angling. The area has an active commercial fishery with between 46 and 74 commercial fishermen.

Angler harvest of walleye at Fawcett Lake approaches the lakes average annual production for this species. Excessive harvest of walleye prior to spawning has resulted in the instigation of angling closures on spawning streams. Angling pressure at Orloff Lake is increasing as access to the lake is improved. Sportfish tolerance quotas on the commercial fishery prevent excessive harvests of game fish.

This area is expected to remain a popular destination for anglers because of the high sport value of walleye.

Management Objectives

See generally applicable fisheries management objectives on pp. 10-11.

Management Guidelines

1. Restrictions on resource development may be applied in order to ensure the maintenance of important fisheries habitat in Fawcett, Orloff, Otter and Paul Lakes; the Lesser Slave, Driftwood and Fawcett Rivers; and Howard and Mink Creeks.
2. Fawcett, Orloff and Otter Lakes receive significant recreational use. Appropriate measures will be taken wherever feasible to ensure that the sport fishery is maintained or enhanced as necessary.
3. The free passage of fish past the weir on the Fawcett River will be ensured to maintain fish spawning runs.

Infrastructure

The focus of infrastructure development in this RMA is on servicing industrial developments and recreational developments associated with the major lakes. The primary access in the area is for industrial use. The industrial road between the west end of Fawcett Lake and the Pelican Hills provides key winter access. A secondary highway from Smith to Slave Lake passes through a small portion of the RMA. There is also a road leading to the Fawcett Lake Resort.

Residential subdivision occurs in the area along the Smith - Slave Lake road and at the Fawcett Lake Resort. Both locations are serviced by utilities.

Management Objectives

1. To meet industrial access requirements.
2. To meet the public access and utility requirements for recreational developments in the Fawcett, Otter and Orloff Lakes recreation areas.

Management Guidelines

1. Permanent industrial access will be restricted in recreation areas. In the Otter and Orloff Lakes recreation area, permanent access for industrial purposes will not be located within 800 m of the lakes' shoreline. In the Fawcett Lake recreation area permanent access for industrial purposes will not be located within 400 m of the lake shoreline[4]. Within these constraints industrial access will be permitted on a temporary basis subject to review and consistency with any recreation plans.

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[4] Various provisions of the plan in the Infrastructure, Minerals, Recreation and Timber sections are tied to these standards in lake recreation areas. The standards are intended to mitigate the impacts of industrial resource developments on high recreational and environmental resource values and are designed to reflect the recreation emphases of: i) A natural environment focus providing for extensive recreation opportunities with only primitive facility development (800 m); ii) A more intensive level of recreation use serviced by localized nodal facility developments (400 m).

2. All industrial access development within recreation areas should be conducted during the late fall and winter in order to avoid peak periods of recreational use.

3. Public access in the recreation areas will be to the recreation design standards necessary for delivery of the recreation programs developed for the area.

4. In developing the recreation standards for the Otter-Orloff Lakes point access which could lead to localized intensive use will be avoided. Access design should encourage dispersed use at several locations.

5. Two all-weather gravel roads should be constructed to provide the necessary north-south linkage for existing and future industrial resource development and the necessary east-west connections required to service the Orloff-Otter Lakes recreation area. Possible locations are the route of the present industrial road west of Fawcett Lake and a Fawcett-Calling Lakes link respectively.

Minerals

Minerals resource development has focused on petroleum and natural gas exploration and development. Petroleum and natural gas dispositions cover 62 per cent of the RMA, while natural gas fields cover 30 per cent. There are 11 producing natural gas wells and 12 capped wells. All of the Peter gas field and parts of three other fields (Blanch, Spur and Marten Hills) fall within the RMA. There are two gas plants, and 44 km of major natural gas pipelines. 1981 production of natural gas was 124 X 10^6 m^3 (valued at $11.5 million); natural gas reserves were 2 103 X 10^6 m^3. No petroleum has been found. A very tiny portion of the Athabasca Oil Sands falls within the area, but there has been no related activity. The potential for coal, quarriable and metallic minerals, and aggregate development is low.

Management Objective

To provide opportunities for industry to explore and develop the mineral resources of the North Athabasca RMA.

Management Guidelines

1. Within the first 800 m of the shorelines of Orloff and Otter Lakes and within the first 400 m of the shorelines of Fawcett Lake, the exploration for and development of coal, aggregate and quarriable and metallic minerals will be conducted in a manner consistent with the protection of the high recreational and environmental values of the area. This may involve modified minerals operations. The following restrictions will apply on petroleum and natural gas exploration and development operations:

   -- exploration and development activities will be confined to the winter, while production will be allowed year round;
   -- all operations will avoid existing recreation facilities and developments.

2. Within the remaining portion of the lakes' recreation areas, and particularly on heights of land visible from the lakeshore or recreation facilities, modified minerals operations may be required to ensure compatibility with the high recreational and environmental values of the area.

Recreation

Historically, recreational use in the North Athabasca area has focused on Fawcett Lake, which has two facility areas - an AFS campground at the west end and two commercial resorts, Fawcett Lake Resort and Broken Paddle, on the south shore. Peak use occurs on fine summer weekends. Elsewhere, recreational use is extensive. Canoeing is popular along the Lesser Slave River and is possible during high flow periods on the Driftwood and Fawcett Rivers. Much of the backcountry and some of the smaller lakes provide an ideal setting for high quality wildland recreation experiences.

Management Objectives

1. To provide localized nodal recreational developments catering primarily to a variety of water-oriented uses at Fawcett Lake.
2. To provide localized primitive public recreation developments catering primarily to extensive water-oriented recreation uses at Orloff and Otter Lakes.
3. To ensure continued opportunities for extensive recreation activities providing wildland recreation experiences.

Management Guidelines

1. A Lakeshoreland Management Plan should be prepared for Fawcett Lake on a priority basis. Lakeshoreland Management Plans should also be prepared for Orloff and Otter Lakes.
2. Dispositions for small-scale commercial recreation developments will not be granted within the Orloff-Otter Lakes recreation area. Within the Fawcett Lake recreation area the appropriateness of additional facility-based, small-scale commercial recreation developments will be determined on a site-specific basis by the proposed Lakeshoreland Management Plan.
3. Only minor public recreation developments will be provided at Orloff and Otter Lakes. Facilities, such as camping areas, will be developed to primitive standards and will have a restricted number of access points. Roads will be developed to

minimal standards. To facilitate extensive recreation opportunities, consideration will be given to the development of both backcountry and water-based trails.

4. Expansion of the existing Fawcett Lake Resort to provide for all-season use or to encompass a larger land base will be permitted subject to the submission of both General and Detailed Recreation Plans. Approval will require that the proposal complements any plans or public recreation programs in effect and avoids areas of important wildlife habitat.

5. Public recreation development in the Fawcett Lake area will focus on expanding the existing AFS campground. New campgrounds will be built away from the lakeshore. All campgrounds and day use facilities should be developed within 400 m of the lake. Direct lake access will be limited. As part of the overall recreation development, consideration will be given to incorporating the following features:

   -- an interpretive program focusing on the various users of the resources of the area;
   -- access and basic shelter facilities for ice fishing, cross-country skiing, and the loading and offloading of snowmobiles; and
   -- cross-country skiing and hiking trails.

6. Opportunities for recreation boating (including canoeing, sailing and power-boating) will be provided at Fawcett Lake. Launching and docking facilities will be limited, and although convenience of location for users will be a key site selection criterion, facilities will be located to avoid areas of important wildlife habitat, campgrounds and swimming areas. Space and time zoning may be required to protect fish spawning grounds in the vicinity of Mink Creek and the great blue heron colony on the north west shore of the lake.

7. Subject to lake capability constraints as determined through detailed assessment by the proposed Lakeshoreland Management Plan, opportunities will be created for private sector recreational cottage development in the vicinity of Fawcett Lake. Linear lakeside developments will not be permitted.

8. Outside the Fawcett Lake recreation area, public recreation developments will be limited to overnight camping facilities along access routes and in waterside areas as required. Trail systems for non-motorized use may be developed in conjunction with such facilities.

9. Boating restrictions such as space and time zoning may be required to protect the heron rookeries on the island in Orloff Lake.

10. In the Fawcett Lake recreation area, OHV use will be restricted as required in the vicinity of areas of public and private recreation developments. Snowmobile areas may be designated in conjunction with public campground locations, but must be separated from winter day use activity areas such as snowshoeing and cross-country ski trails.

11. Outside the Fawcett Lake recreation area no OHV trail systems or staging areas will be developed by provincial government agencies.

12. The use of OHVs will be restricted and may be prohibited in the vicinity of the Driftwood and Fawcett Rivers and Mink Creek (critical winter habitat for ungulates, aquatic furbearer and upland furbearer species) and the northwest shore of Fawcett Lake (great blue heron colony).

13. Due to their physical characteristics and a lack of development, Howard, Peter and Paul Lakes provide opportunities for high quality wildland recreation experiences. Any resource exploration, development or management activities must recognize the primacy of these values.

Timber

The North Athabasca RMA is entirely forested. Much of the area is rolling hills covered with aspen, intermixed with some coniferous stands and scattered muskeg.

The coniferous timber, located mainly southwest and southeast of Fawcett Lake, is held under quota by Zeidler Forest Industries and Bissell Bros. Lumber Ltd. Little recent harvesting has taken place as both quota holders have met their timber commitments for the current cutting quadrant. The total cutting of fuelwood, posts and rails has been the primary community timber use.

The committed coniferous sawlog AAC for the S-5 FMU, of which this RMA is a part, totals 14 267 000 board feet (61 230 m^3). In addition, this RMA may provide a portion of the small diameter timber for the proposed Athabasca Timber Development Area. The Athabasca TDA Proposal estimates a net coniferous AAC in the S-5 FMU of 11 218 000 board feet (48 140 m^3).

Weldwood of Canada will soon enter into a Forest Management Agreement with the Province of Alberta to manage an area which will sustain, on a perpetual basis, 250 000 m^3 of white aspen annually. The exact area of the Forest Management Area is to be determined; however, it will include appropriate lands in this RMA.

At present, a deciduous AAC of 1 778 400 board feet (4 630 m^3) has been reserved for community use in the S-5 FMU. Deciduous timber in the North Athabasca RMA will contribute a portion to this AAC.

Management Objectives

1. To continue sustained yield management of coniferous timber to support existing quota commitments and to provide small diameter timber for the proposed Athabasca Timber Development Area.
2. To manage and utilize all deciduous growing stock to support the Weldwood waferboard plant in Slave Lake.
3. To satisfy a portion of the local community demand for deciduous and coniferous timber.

Management Guidelines

1. Disposition of coniferous and deciduous timber will be regulated through Quota Licences, Local Timber Permits, Commercial Timber Permits and the Weldwood Forest Management Agreement.

2. Large-scale timber harvesting will not be conducted within designated buffer zones around major lakes. The width of these buffer strips is:

   -- Otter and Orloff Lakes: 800 m
   -- Fawcett Lake: 400 m

3. Land within the Otter, Orloff and Fawcett Lake recreation areas or land visible from the lakeshores will require special harvesting considerations regarding aesthetic quality.

Wildlife

This area consists mainly of good to excellent moose habitat, and has an estimated population of 650 moose. The potential harvest is about 100 moose, although the current harvest is estimated at only 30 to 45 moose, providing 750 recreational hunter days. There are an estimated 220 deer in the RMA; the current recreational harvest is estimated at 18 (700 hunter days).

The lower Driftwood-Fawcett Rivers, Fawcett, Howard and Orloff Lakes areas are important furbearer habitat. This RMA has an estimated potential annual production of more than $140 000 worth of fur (1983 dollars/prices), although it is unlikely this level of production will be reached since the more productive species (especially squirrel, beaver, muskrat and weasel) are generally underharvested.

Key waterfowl habitat (production, staging, moulting) is found on Fawcett, Howard, Otter and Orloff Lakes. There is a great blue heron colony on Orloff Lake.

This is a very important destination area for big game hunters and is likely to remain a popular hunting area, due to its proximity to Edmonton.

Management Objective

1. To maintain populations and harvests of wildlife to at least the present level and, where possible, to increase populations and harvests through appropriate management techniques.
2. To ensure that furbearer populations in recreation areas are maintained to at least present levels by protecting habitat and minimizing harassment resulting from development.

Management Guidelines

1. Unimproved grazing, access and utility developments, minerals exploration and development activities, timber harvesting and other forest management activities, along with other resource developments, may be restricted or modified to ensure the maintenance of areas of important habitat and environmental

value which exist along the watercourses of the Athabasca, Driftwood and Fawcett Rivers and Mink Creek; in the upland area around Otter and Orloff Lakes; and in the vicinity of Fawcett Lake.

2. The great blue heron colony located on Orloff Lake is recognized as critical habitat. Resource development and other activities may be prohibited within a designated area around this colony. This area is to be delineated through a detailed analysis by the Fish and Wildlife Division as part of the operational follow-up to this plan.

3. The upland area around Otter-Orloff Lakes and the Fawcett River and Mink Creek in the vicinity of Fawcett Lake will receive specific recognition as critical wildlife habitat. These areas all contain important moose winter range as well as habitat for aquatic furbearers. A detailed operational review of all resource development proposals will be required. Modifications to resource development programs may include, but are not limited to, time restrictions on development activity, modifications to cutting patterns, special reforestation or revegetation requirements, buffer strips around sensitive areas, and use of non-conventional methods such as handcut seismic lines. The existing referral system will be used to incorporate such mitigative measures until more specific guidelines are developed.

3.6 LAWRENCE LAKE AREA

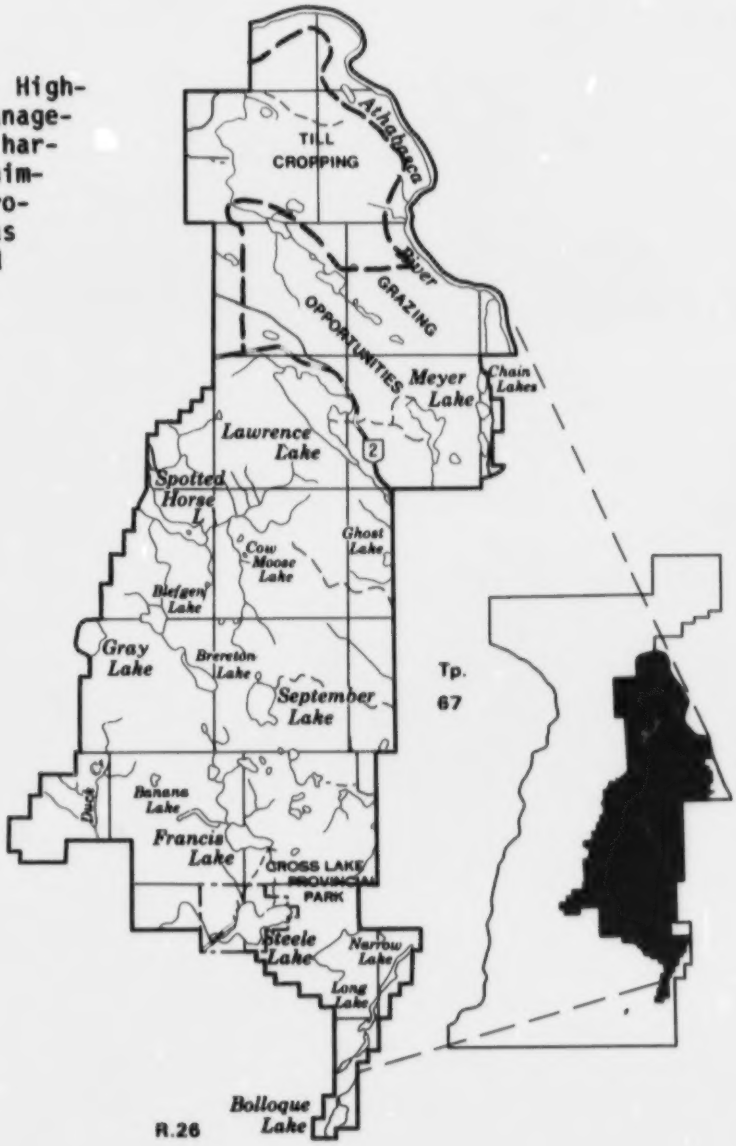
INTRODUCTION

The Lawrence Lake area is an undulating plateau overlain with till and organic deposits and separated by an escarpment from lower-lying lands to the east of the planning area. The RMA is relatively large, encompassing about 1 370 km^2. The most salient geomorphological feature is the deeply incised Athabasca River valley on the north east boundary. Elsewhere relief is less, although the lower part of Lawrence Lake and Narrow and Long Lakes lie in well defined valleys.

There are many lakes in the area and numerous small sloughs associated with extensive areas of low-lying muskegs -- particularly to the north of Lawrence Lake and between September and Francis Lakes. Highway 2 passes through the RMA north of Lawrence Lake.

MANAGEMENT INTENT

The focus on lands south of Highway 2 will be on multiple use management with sustained yield timber harvesting, primarily coniferous, unimproved and improved grazing programs, petroleum and natural gas exploration and development, and intensive and extensive water-oriented recreational uses. North of Highway 2 certain lands will be set aside for recreation, woodlot, wildife and environmental purposes. Remaining lands will be separately apportioned to provide opportunities for both improved grazing -- including grazing associations, and till cropping. Timber depletion cuts and agricultural development activities will be co-ordinated.



Agriculture

The largest proportion of arable lands lie north of Highway 2. There are arable lands south of Highway 2, but these are generally restricted to the southern and western periphery. Marginal lands suitable for improved grazing are generally located throughout the entire RMA, except for areas around Banana Lake, Blefgen Lake, southwest of Lawrence Lake, and in the northernmost part of the RMA. Some grazing dispositions exist in the RMA nearer settled lands.

It is anticipated that there will be a significant increase in agricultural activity north of Highway 2.

Management Objectives

1. To permit both till cropping and large-scale improved grazing on separate land bases north of Highway 2, while recognizing recreation interests, wildlife habitat and environmental values.
2. To ensure the orderly and timely development of agricultural lands now in the Green Area.
3. To meet local needs for supplementary grazing for domestic livestock production south of Highway 2 by permitting improved and unimproved grazing programs, while recognizing recreation interests, wildlife habitat, environmental values and modifications necessary to accommodate timber interests.

Management Guidelines

1. Crown land dispositions for till cropping purposes will only be made in a designated portion of the RMA north of Highway 2 (see Figure 3).
2. Crown land dispositions for large-scale grazing purposes will be made in designated portions of the RMA north of Highway 2 (see Figure 3) with preference given to grazing associations.
3. North of Highway 2 detailed field analysis and inventories at the operational level will identify all lands suitable for agricultural development as soon as possible. Agricultural development activities will be co-ordinated with other resource sectors. Particular attention will be given to ensuring efficient integration of grazing developments with wildlife habitat requirements in the area designated for large-scale improved grazing.

4. At the operational level, the permanent disposition of land for agricultural purposes will take place in a manner which:

   -- firstly, recognizes the expansion requirements of existing farm units, especially where additional lands are required in order to create a viable unit;
   -- secondly, provides a land base for the immediate family of existing farmers to create their own farms; and
   -- thereafter, contingent upon satisfying the first two conditions, provides opportunities for people from outside the sub-region to establish new farm units.

5. Public Lands will consult with Alberta Environment prior to posting any lands for sale. Where potential drainage problems are foreseen, posting will not proceed until a proper drainage and water management program has been developed by Alberta Environment.

6. Dispositions for small-scale improved grazing programs will be permitted south of Highway 2.

7. To the south of Highway 2 all grazing programs require recognition of sustained yield coniferous timber harvesting.

8. Dispositions for improved or unimproved grazing purposes will not be made in the Meyer, Francis-Banana, Long, Narrow or Bolloque Lakes recreation areas.

9. Dispositions for improved grazing purposes will not be made in the Lawrence or Chain Lakes recreation areas.

10. Dispositions for unimproved grazing purposes will not be made within 400 m of Lawrence or Chain Lakes or within the immediate vicinity of established recreation sites, except if otherwise provided for in a Lakeshoreland Management Plan.

11. No Crown land dispositions for improved grazing purposes will be made in areas of important wildlife habitat and environmental value on lands within the breaks of the Athabasca River; lands to the north and west of the Francis-Banana Lakes area; lands surrounding the chain of small lakes which follow the northwest-southeast trending valley lying northeast of Lawrence Lake, midway between Lawrence Lake and the Athabasca River; lands surrounding the great blue heron colony located on the northeast point of Meyer Lake and lands in the vicinity of Bolloque Lake.

Fisheries

Banana, Bolloque, Francis, Ghost, Lawrence, Long, Meyer, and Steele Lakes support populations of northern pike and yellow perch. In addition to these two species, walleye are also found in Jenkins and Narrow Lakes. Lower Chain Lake is stocked with rainbow trout. A dam and fishway permit pike access into Bolloque Lake. The Athabasca River contains several species of sportfish including pike, walleye and goldeye.

The lakes in this RMA have a potential annual production of 4 621 kg of pike, 4 378 kg of perch, 567 kg of walleye and 454 kg of rainbow trout; this harvest could provide an estimated 52 457 recreation days of angling. There is no commercial fishing in this RMA.

Angling pressure is expected to increase in this area because of the generally rising interest in sport fishing throughout the province, the proximity of the area to Edmonton, and improving access.

Management Objectives

See generally applicable fisheries management objectives on pp. 10-11.

Management Guidelines

1. Restrictions on resource development may be applied in order to ensure the maintenance of important fisheries habitat in: Banana, Francis, Ghost, Jenkins, Lawrence, Long, Lower Chain, Meyer, Middle Chain, Narrow and Steele Lakes; the Athabasca River; and French and Lower Dutch Creeks.

2. Ghost Lake should be stocked with rainbow trout if a severe winterkill eliminates existing pike and perch populations.

3. Lower Chain and Narrow Lakes receive significant recreational use. Appropriate measures will be taken wherever feasible to ensure that the sport fishery is maintained or enhanced as necessary.

Infrastructure

The infrastructure facilities within this RMA are primarily focused on industrial development. The major public access route is Highway 2 which divides into old and new sections past Lawrence Lake and provides access across a portion of the RMA. In addition, there are numerous industrial roads and trails. There is no permanent residential development, but there are small recreation cottage subdivisions on the eastern edge of Lawrence Lake and adjacent to Long and Narrow Lakes. These are also a number of institutional users on Long, Narrow and Bolloque Lakes, such as the cadets, a local fish and game association, and Team Time -- a youth group.

Industrial utility developments and major gathering and distribution systems, primarily for natural gas, exist throughout the area.

Increased servicing and access requirements will be needed as agricultural expansion takes place, particularly in the northern portion of the RMA, where some lands will be sold for till cropping purposes. Recognition of this future land use has implications for the way in which infrastructure is developed to service existing industrial users.

Management Objectives

1. To provide public access and the necessary utility servicing requirements for proposed recreation development at Long, Lawrence, Chain, Meyer, Francis and Banana Lakes.

2. To provide access for residential development associated with future expansion of the agriculture land base into this area and to ensure that all other access requirements must be developed with that long-term objective in mind.

3. To gradually phase in utility services to reflect the future changes in land use within the area while ensuring a smooth transition between natural resource and recreation development needs and infrastructure requirements for the servicing of the newly developing agricultural community.

Management Guidelines

1. Permanent industrial access will be restricted in the recreation areas. In the Meyer Lake and Francis - Banana Lakes recreation areas, permanent access for industrial purposes will not be located within 800 m of the shoreline. In the Lawrence Lake and Chain Lakes recreation areas, permanent access for industrial purposes will not be located within 400 m of the shoreline. Within these constraints industrial access will be permitted on a temporary basis and subject to review and consistency with any recreation plans.

2. In the Long Lake recreation area any industrial access requirements will be integrated with existing or proposed recreation plans for facilities and access.

3. All industrial access development within recreation areas should be conducted during the late fall and winter to avoid peak periods of recreational use.

4. Public access and servicing in the recreation areas will be to the recreation design standards necessary for delivery of recreation programs developed for the area.

5. In developing the recreation standards for Meyer, Francis and Banana Lakes public access will be required to provide optimum dispersement of the users and to ensure that natural environmental values are retained.

6. On a priority basis, access to service both industrial and, particularly, the recreational expansion needs, should be provided to the west shore of Lawrence Lake.

7. Wherever possible, industrial and public access will be developed to accommodate the future grid system of roads necessary for agriculture expansion. This is particularly necessary in portions of the area north of Highway 2. Similarly, utility developments required for servicing the natural resource development of the area should be planned on a grid basis where possible, in order to recognize the future service requirements of the area for agriculture expansion.

Minerals

Minerals resource development has focused on petroleum and natural gas exploration and development. Petroleum and natural gas dispositions cover 72 per cent of the RMA, while natural gas fields cover 38 per cent. There are 48 producing natural gas wells and 35 capped natural gas wells. The Meyer and Smith natural gas fields are entirely contained in this RMA, together with parts of the Baptiste, Big Bend, Big Coulee, Bolloque, Bouvier, Crooked and Steele fields. There are four natural gas plants and 58 km of major natural gas pipelines. Natural gas production in 1981 was 401 X 10^6 m^3 (value of $37 million) and reserves were 4177 X 10^6 m^3. No petroleum has been found. The potential for coal, quarriable and metallic minerals, and aggregate development is low.

Management Objectives

To provide opportunities for industry to explore and develop the mineral resources of the Lawrence Lake RMA.

Management Guidelines

1. Within the first 800 m of the shorelines of Meyer, Francis and Banana Lakes and within the first 400 m of the shorelines of Lawrence and Chain Lakes, the exploration for and development of coal, aggregate, and quarriable and metallic minerals will be conducted in a manner consistent with the protection of high recreational and environmental values of the area. This may involve modified minerals operations. The following restrictions will apply on petroleum and natural gas exploration and development operations:

   - exploration and development activities will be confined to the winter, while production will be allowed year round;
   - all operations will avoid existing recreation facilities and developments.

2. Within the remaining portion of the lakes' recreation areas, and particularly on heights of land visible from the lakeshore or recreation facilities, modified minerals operations may be required to ensure compatibility with the high recreational and environmental values of the area.

3. Within the recreation area surrounding Bolloque, Long and Narrow Lakes (delineated on Figure 3 at the end of this document and generally corresponding to all Crown lands within one quarter section of the lakeshores), the following restrictions will apply:

   -- petroleum and natural gas exploration and development operations will be confined to the winter, while production will be allowed year round. All operations will avoid existing recreation facilities and developments;
   -- the exploration for and development of aggregate, coal, and quarriable and metallic minerals will not be permitted.

Recreation

The focus of recreational use in the Lawrence Lake RMA is on Lawrence, Chain, Steele, Long and Narrow Lakes - all of which receive intermittent high levels of use. Lawrence Lake is the largest lake in the RMA and has the best access - there are two cottage subdivisions on private land abutting the lake and an AFS campground. There are also cottage developments adjacent to Long Lake and institutional users on Long and Narrow Lakes. There is a provincial park (Cross Lake) located on Steele Lake. Recreation inventories have identified high recreational values on Meyer, Francis and Banana Lakes. Extensive areas of low-lying swamp and muskeg abut many of the larger lakes in the central portion of the RMA (e.g., Spotted Horse, Blefgen, Brereton and September Lakes), thereby severely limiting recreation potential. Much of the RMA is relatively inaccessible and contains a very large number of small lakes - opportunities for extensive recreational uses are considerable.

Management Objectives

1. To provide localized nodal recreation developments catering primarily to a variety of water-oriented recreational uses at Lawrence Lake.
2. To provide localized primitive public recreation developments catering primarily to extensive water-oriented recreational uses at Meyer, Francis and Banana Lakes.
3. To encourage localized intensive recreation developments catering to organized groups and local municipalities at Long, Narrow and Bolloque Lakes.
4. To ensure continued opportunities for extensive recreation activities providing wildland recreation experiences.

Management Guidelines

1. A Lakeshoreland Management Plan should be prepared for Lawrence and Meyer Lakes on a priority basis. Lakeshoreland Management Plans should also be prepared for Banana, Bolloque, Chain, Francis, Long, Meyer and Narrow Lakes.

2. Dispositions for commercial recreation developments will not be granted within the Meyer, Francis and Banana Lakes recreation areas. Within the Lawrence, Chain, Long, Narrow and Bolloque Lakes recreation areas the appropriateness of facility-based, small-scale commercial recreation developments will be determined on a site-specific basis by the proposed Lakeshoreland Management Plans.

3. Only minor public recreation developments will be provided at Meyer, Francis and Banana Lakes. Facilities, such as camping areas, will be developed to primitive standards and will have a restricted number of access points. Roads will also be built to minimal standards. To facilitate extensive recreation opportunities, consideration will be given to the development of both backcountry and water-based trails.

4. Public recreation development in the Lawrence Lake recreation area will focus on expanding the existing AFS campground and developing a new one, probably also on the north side of the lake. Development of the second campground will require new access. All new campground developments will be built away from the lakeshore. All campgrounds and day use facilities should be developed within 400 m of the lake. Direct lake access will be limited. As part of the overall recreation development consideration will be given to incorporating the following features:

   -- an interpretive program focusing on the various users of the resources of the area;
   -- access and basic shelter facilities for ice fishing, cross-country skiing, and loading and offloading of snowmobiles; and
   -- cross-country skiing and hiking trails.

5. Opportunities for recreation boating (including canoeing, sailing and power-boating) will be provided at Lawrence Lake. Launching and docking facilities will be limited and although convenience of location for users will be a central site selection criterion, facilities will avoid areas of important wildlife habitat, fish spawning grounds, campgrounds and swimming areas. Space and time zoning may be required in order to minimize nuisance effects on users of existing cottage subdivisions.

6. Subject to lake capability constraints as determined through detailed assessment by the proposed Lakeshoreland Management Plan, opportunities will be created for private sector recreational cottage development in the vicinity of Lawrence Lake. Linear lakeside developments will not be permitted.

7. Outside the Lawrence, Long, Narrow and Bolloque Lakes recreation areas, public recreation developments will be limited to overnight camping facilities along access routes and in lakeside areas as required. Non-motorized trail systems may be developed in conjunction with such facilities.

8. Basic facilities for boat launching and docking will be provided at the major access points on Meyer, Francis and Banana Lakes. Time and space zoning may be required in order to protect migratory bird habitat and the great blue heron colony on the northeast point of Meyer Lake.

9. In the Lawrence, Long, Narrow and Bolloque Lakes recreation areas, OHV use restrictions will be imposed as required in the vicinity of areas of public and private recreation developments. Snowmobile trails may be designated in conjunction with public campground locations at Lawrence Lake, but must be separated from winter day use activity areas such as snowshoeing and cross-country ski trails. Any OHV developments proposed by either the local municipalities or organized groups in the Long and Narrow Lakes recreation area will require the submission of General and Detailed Recreation Plans. Approval will require that the proposals avoid areas of important wildlife habitat.

10. Outside the Lawrence, Long, Narrow and Bolloque Lakes recreation areas no OHV trail systems or staging areas will be developed by provincial government agencies.

11. The use of OHVs will be restricted and may be prohibited in the vicinity of the following important wildlife habitat areas:

    -- the northeast point of Meyer Lake (heron rookery)
    -- lands to the north and west of Francis and Banana Lakes and lands surrounding the chain of small lakes which follow the northwest-southeast trending valley lying northeast of

Lawrence Lake, midway between Lawrence Lake and the Athabasca River (critical habitat for ungulates, aquatic furbearers and upland furbearer species).

12. All provisions of this plan affecting the Francis and Banana Lakes recreation area will be subject to change should this area eventually become part of Cross Lake Provincial Park.

13. Provision of intensive recreation facilities for organized groups and local municipalities will be permitted in the Long, Narrow and Bolloque Lakes recreation area subject to the submission of both General and Detailed Recreation Plans. Approval will require that the proposals complement any plans or public recreation programs in effect and avoid areas of important wildlife or fisheries habitat.

Timber

The terrain is mainly gently rolling hills covered with second growth poplar intermixed with coniferous timber near Lawrence Lake, Meyer Lake, September Lake and in the Otter Creeks area.

The Lawrence Lake RMA contains most of the planning area's coniferous timber south of the Athabasca River. This timber is currently managed under the Community Farm Woodlot Plan. At present, most of the harvesting is concentrated south of Lawrence Lake. While demand for lumber is down due to present market conditions, it is expected to increase. Requirements for fuelwood, posts and rails have remained fairly steady.

Coniferous timber in this RMA will contribute to the AAC of that portion of the planning area south of the Athabasca River. The current AAC for community use is 1 310 000 board feet (5 620 m^3) but a five-year demand study has indicated a shortfall of 3 100 000 board feet (13 310 m^3) per year for community needs. Timber from the Lawrence Lake RMA will provide a majority of the volume required to make up this shortfall.

Weldwood of Canada may utilize the deciduous timber in this RMA to provide for shortfalls from the company's proposed FMA area. Community demand for deciduous timber is low at this time.

Should the deciduous timber in the Lawrence Lake RMA not be required to make up shortfalls in Weldwood's proposed FMA area, it may be made available to meet additional community needs.

Timber harvesting in the northern half of the RMA, on those lands identified for agricultural development, will be on a depletion cut basis.

Management Objectives

1. To provide, on a sustained yield basis, deciduous timber for community use.
2. To carry out depletion cuts in areas intended for agricultural expansion.

3. To manage remaining available deciduous timber on a sustained yield basis. This timber may be required to bridge age/class deficiencies in the aspen management area (FMA) allocated to Weldwood.

4. To provide a portion of the coniferous AAC in the S7 FMU on a sustained yield basis for community use.

5. To provide a major portion of the additional land required to support an increase in the coniferous cut of 3 100 000 board feet (13 310 m^3) for community use.

Management Guidelines

1. Disposition of coniferous and deciduous timber will be regulated through LTPs, CTPs and the possible Weldwood DTA.

2. When depletion cuts take place in areas intended for agricultural expansion, appropriate harvesting techniques will be used so as not to increase the costs of agricultural development. These techniques will not involve land clearing itself, i.e. removal of stumps, but may employ the use of special harvesting methods as required.

3. Large-scale timber harvesting will not be conducted within designated buffer zones around major lakes in this RMA. The width of these buffer zones will be as follows:

   -- Meyer Lake and Francis-Banana Lakes: 800 m
   -- Lawrence and Chain Lakes: 400 m
   -- Bolloque, Long and Narrow Lakes: delineated on Figure 3.

4. Heights of land visible from the surface of the above-named lakes and within 1.6 km of the lakeshore or other recreation areas will require special harvesting considerations regarding aesthetic quality.

Wildlife

This area has a high capability for moose; approximately 60 per cent is good or excellent moose habitat and only 15 per cent is poor or very poor. There are an estimated 900 moose in this RMA - approximately 500 of which are located south of Highway 2. The Athabasca River valley and areas near September and Brereton Lakes are considered key moose habitats. Moose are important game animals; an estimated 130 moose are harvested annually, providing 3 250 recreation days of hunting. There is also some subsistence hunting by treaty Indians; the harvest is not known, but is estimated to be about 15 moose per year. White-tailed deer and mule deer are also important game species with the populations estimated to exceed 340 in this RMA. Present harvest of white-tailed deer is estimated to be 100 annually, providing about 2 780 recreation days of hunting. There is an isolated population of elk in the vicinity of Bolloque and Narrow Lakes.

Furbearer populations and harvests are above average, and there are productive furbearer habitats located around Lawrence and Meyer Lakes, west of Baptiste Lake and in the Bolloque, Long and Narrow Lakes area. This area has an estimated potential annual production of more than $210 000 worth of fur (1983 dollars/prices), although it is unlikely this level of production will be reached since the more productive species (e.g., squirrel, beaver, muskrat and weasel) are generally underharvested.

The area has an above average harvest of ruffed and spruce grouse with an estimated annual harvest of 5 450 birds. This provides an estimated 2 840 days of sport hunting. There is a great blue heron colony on Meyer Lake.

This area is an important destination area for both big and small game hunters and, because of its proximity to Edmonton, it is anticipated that the demand for sport hunting in this area will remain high.

Management Objectives

1. To maintain populations and harvests of wildlife in the area south of Highway 2 to at least the present level and, where possible, to increase populations and harvests through appropriate management techniques.

2. To substantially increase deer populations and harvests in the area north of Highway 2 by appropriate management techniques to provide an alternate big game species to replace moose.

3. To reduce the impact of large-scale grazing developments on moose populations by selectively retaining habitat in the agricultural development areas.

Management Guidelines

1. Unimproved grazing, access and utility developments, minerals exploration and development activities, timber harvesting and other forest management activities, along with other resource developments, may be restricted or modified to ensure the maintenance of areas of important habitat and environmental value which exist on lands within the breaks of the Athabasca River; lands to the north and west of the Francis-Banana Lakes area; lands surrounding the chain of small lakes which follow the northwest-southeast trending valley lying northeast of Lawrence Lake, midway between Lawrence Lake and the Athabasca River; and lands in the vicinity of Bolloque Lake.

2. The great blue heron colony located on Meyer Lake is recognized as critical habitat. Resource development and other activities may be prohibited within a designated area around this colony. This area is to be delineated through a detailed analysis by the Fish and Wildlife Division as part of the operational follow-up to this plan.

3. Protection of furbearer habitat must be a major consideration during the development of recreation facilities on Lawrence, Chain, Long and Narrow Lakes.

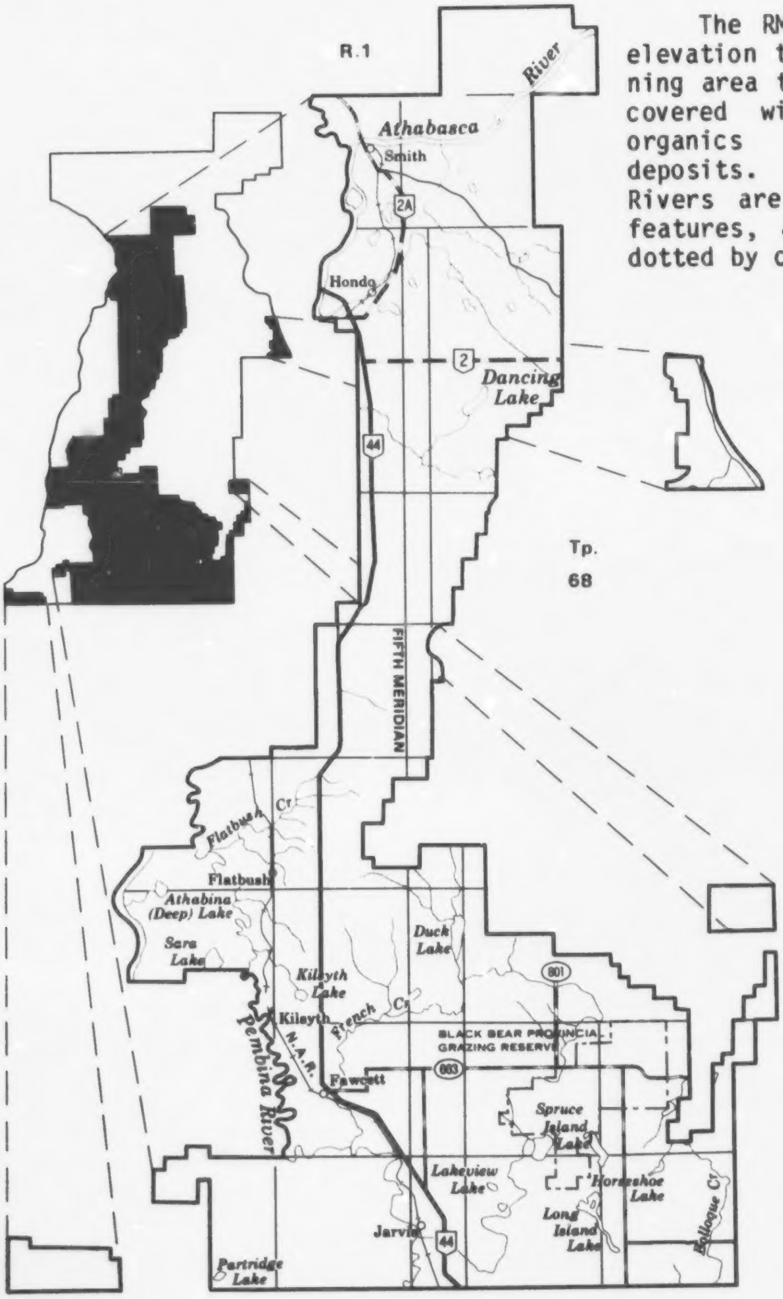
4. Wildlife management will focus primarily on moose, deer and elk.

5. Protection of sufficient habitat to meet the management objectives will be a major consideration in the planning of agricultural activities in the area. Where possible, this habitat requirement will be achieved through retention of habitat unsuitable for agriculture, and habitat in important habitat areas. Other mitigative measures include maintaining blocks of moose habitat within agricultural areas, retaining riparian habitats and buffer strips of natural vegetation around lakes and streams, and maintaining forested travel corridors to permit moose to move to wintering areas such as the Athabasca River Valley.

3.7 SMITH-JARVIE AREA

INTRODUCTION

Smith-Jarvie is the largest RMA in the planning area (about 1 850 km^2) and also contains most of the human settlement. There are five communities located along the CN railway - Smith and Hondo in the north, and Flatbush, Fawcett and Jarvie in the south. A well developed network of secondary and local roads service surrounding agricultural lands. Primary Highway 44 bisects the area in a north/south direction, connecting with Highway 2 just south of Hondo.



The RMA lies at a slightly higher elevation than those parts of the planning area to the west and north, and is covered with till interspersed with organics and alluvial-lacustrine deposits. The Athabasca and Pembina Rivers are the most prominent natural features, and portions of the RMA are dotted by clusters of small waterbodies.

This RMA also encompasses three small outliers-lands surrounding the community of Vega in the south west of the planning area, lands to the north of Long Lake, and lands adjacent to the Athabasca River east of the Lawrence Lake RMA.

MANAGEMENT INTENT

An emphasis on agricultural uses with the disposition of lands suitable for till cropping and capable of improved grazing to meet the needs of the local community. Intensive water-oriented recreational uses will be the focus in the Long Island Lake area. Remaining Crown lands will be managed on a multiple use basis for petroleum and natural gas exploration and development, for sustained yield timber harvesting, and for unimproved grazing to meet local farm needs. Lands of particular wildlife or environmental significance or sensitivity will not be sold.

Agriculture

The Smith-Jarvie RMA has the largest proportion of deeded land in the Big Bend planning area. Most of the available Crown land lies in the northern half of the RMA on both sides of Highway 44 between Flatbush and Hondo -- east of Dancing Lake and north of Gray Lake. Some scattered Crown lands are located in the southern half, but the largest block of Crown land contains the Black Bear Provincial Grazing Reserve in the vicinity of Spruce Island Lake (Twps 64-65, Rge 26, W4M).

This RMA will provide additional lands to meet local needs of the agricultural community. Some of the lands within this area are suitable for till cropping. Other marginal agricultural lands are capable of improved grazing and forage production.

Management Objectives

1. To make available lands with till cropping and improved grazing capability to the local farming community, consistent with the recognition of areas of important wildlife habitat and environmental value.
2. To make available through grazing dispositions land suitable for unimproved grazing, consistent with the recognition of areas of important wildlife habitat and environmental value.
3. To ensure the orderly and timely development of agricultural lands now in the Green Area.

Management Guidelines

1. The initial focus for agricultural expansion will be on lands to the west and north of Flatbush and north to the Hondo-Smith areas, east of Duck Lake, north of Gray Lake and east of Dancing Lake.
2. Detailed field analysis and inventories at the operational level will identify lands suitable for agricultural development. Agricultural development activities will be co-ordinated with other resource sectors. Crown lands of till cropping and improved grazing potential will be disposed for private

ownership, subject to the preservation of areas of important wildlife habitat and environmental value within the breaks of the Athabasca and Pembina Rivers and in the vicinity of Rourke Creek and Spruce Island Lake.

3. At the operational level, the permanent disposition of land for agricultural purposes will take place in a manner which:

   -- firstly, recognizes the expansion requirements of existing farm units, especially where additional lands are required in order to create a viable unit;
   -- secondly, provides a land base for the immediate family of existing farmers to create their own farms; and
   -- thereafter, contingent upon satisfying the first two conditions, provides opportunities for people from outside the sub-region to establish new farm units.

4. Public Lands will consult with Alberta Environment prior to posting any lands for sale. Where potential drainge problems are forseen, posting will not proceed until a proper drainage and water management program has been developed by Alberta Environment.

5. Dispositions for till cropping or grazing purposes will not be made in the Long Island Lake recreation area.

6. The boundary of the Smith-Jarvie and Lawrence Lake RMA will require detailed assessment prior to the disposition of Crown lands for agricultural uses.

7. Agricultural expansion in some areas may require detailed analysis and consultation with the AFS and F & W prior to disposition.

8. Crown lands having till cropping or improved grazing potential, but subject to land use restrictions, will be made available under lease dispositions.

9. Areas of important wildlife habitat and environment value will be recognized through the modification of grazing programs on lands within the breaks of the Athabasca and Pembina Rivers and lands in the vicinity of Rourke Creek and Spruce Island Lake.

10. Unimproved grazing will be the only agricultural activity permitted in ungulate travel corridors.

Fisheries

Northern pike and yellow perch are found in Long Island Lake and may occur seasonally in other lakes. The Athabasca and Pembina Rivers have populations of sportfish, including walleye and pike. Horseshoe Lake has been stocked with rainbow trout, but the lake experiences winterkills and stocking will not be repeated unless the overwintering conditions improve.

The lakes in this RMA are estimated to have a potential annual harvest of 1 120 kg of pike and 480 kg of perch; this harvest could provide an estimated 2 664 recreation days of angling. There is no commercial fishing.

Management Objectives

See generally-applicable fisheries management objectives on pp. 10-11.

Management Guideline

Restrictions on resource development may be applied to ensure the maintenance of important fisheries habitat in Long Island Lake and the Athabasca and Pembina Rivers.

Infrastructure

The Smith-Jarvie RMA contains the planning area's largest concentration of developed infrastructure facilities. Highways 44 and 2 are the main access routes, but an extensive secondary road network services local rural areas. The CN railway line in the western portion of the RMA provides a rail service through the area. Smith, Jarvie and Flatbush are the major population centers providing local services for the rural population.

Utilities such as electrical transmission lines, and telephone, gas and oil transmission routes service the rural community.

As the rural development of the RMA increases through expansion of the agriculture land base, infrastructure development will be required to ensure an adequate level of service for residents. The control over the provision and maintenance of these facilities is principally a management responsibility of the local municipal governments.

Management Objective

To provide increased public access to service the expanding agricultural areas while recognizing wildlife and environmental values.

Management Guidelines

1. Development of public access will be dependent on agricultural service requirements.
2. Additional access will reflect expanded agricultural interests to the north and west of the community of Flatbush to the east of Duck Lake, north of Gray Lake and east of Dancing Lake.
3. Development of industrial access will be permitted, dependent on resource requirements, but will be limited. In those areas where industrial access will be required prior to agricultural expansion, the location of access roads should follow the normal access grid system used in agriculture development areas.

Minerals

Minerals resource development has focused on petroleum and natural gas exploration and development. Petroleum and natural gas dispositions cover 74 per cent of this area, while natural gas fields cover 36 per cent. All of the Hondo gas field and parts of 10 other fields (Baptiste, Big Bend, Bolloque, Chisholm, Crooked, Jarvie, Jarvie North, Rourke, Timeu and Victor) fall within the RMA. A small area of the Bolloque field contains petroleum. There are 33 producing natural gas wells, one producing petroleum well and 57 capped natural gas wells. There are 57 km of major petroleum pipeline and 138 km of major natural gas pipeline in this area. Production in 1981 was 800 m^3 of oil (valued at $100 000) and 325 X 10^6 m^3 of gas ($30 million). Natural gas reserves were 3 416 X 10^6 m^3. The potential for coal, quarriable and metallic minerals and aggregate development is low.

Management Objective

To provide opportunities for industry to explore and develop the mineral resources of the Smith-Jarvie RMA.

Management Guideline

Within the recreation area surrounding Long Island Lake (delineated on Figure 3 at the end of this document and generally corresponding to all Crown lands within one quarter section of the lakeshore), the following restrictions will apply:

-- petroleum and natural gas exploration and development operations will be confined to the winter, while production will be allowed year round. All operations will avoid existing recreational facilities and developments;

-- the exploration for and development of aggregate, coal, and quarriable and metallic minerals will not be permitted.

Recreation

The most intense recreation use in the Smith-Jarvie RMA is at Long Island Lake where there are cottage subdivisions, an institutional facility and a local authority campground. Access is good throughout this area, but recreation opportunities are restricted by the limited Crown land base, low-lying, swampy terrain and the eutrophic characteristics of the larger lakes in this area. Both the Pembina and Athabasca Rivers are of recreational significance, particularly for boating.

Management Objectives

1. To encourage localized intensive recreation developments catering to organized groups and the local municipality at Long Island Lake.

2. To ensure continued opportunities for extensive recreation activities on remaining Crown lands.

Management Guidelines

1. A Lakeshoreland Management Plan should be prepared for Long Island Lake on a priority basis. The plan will assess the appropriateness of facility-based, small-scale commercial recreation developments on a site-specific basis.

2. Boating may be restricted or prohibited in the vicinity of the great blue heron colony on Spruce Island Lake.

3. In the Long Island Lake recreation area OHV use restrictions will be imposed as required in the vicinity of areas of public and private recreation developments. Any OHV developments proposed by either the local municipality or organized groups will require the submission of General and Detailed Recreation Plans. Approval will require that the proposals avoid areas of important wildlife habitat.

4. Outside the Long Island Lake recreation area no OHV trail systems or staging areas will be developed by Provincial government agencies.

5. The use of OHVs will be restricted and may be prohibited in the vicinity of the great blue heron colony on Spruce Island Lake.

6. Provision of intensive recreation facilities for organized groups and local municipalities will be permitted in the Long Island Lake recreation area subject to the submission of both General and Detailed Recreation Plans. Approval will require that the proposals complement any plans or public recreation programs in effect and avoid areas of important wildlife or fisheries habitat.

7. Lands in the vicinity of Horseshoe Lake have a high recreational and environmental value and provide for a variety of primarily extensive recreation uses. These lands will remain under Crown control and any resource exploration, development or management activities must recognize the primacy of these values.

Timber

The forest cover on Crown lands consists of deciduous stands and scattered merchantable coniferous types, interspersed with patches of treed muskeg and pine covered ridges. Most of the merchantable coniferous timber is located in and to the north of Township 67.

Coniferous sawlog timber in Township 67 and further north is managed under the Community Farm Woodlot Plan for local use. Harvesting is now occurring east of Chisholm across Highway 44 and will remain in that area for the time being. Local requirements for personal use (posts, rails, fuelwood and lumber) by residents located south of Township 67 will continue on an on-going basis.

Coniferous timber in this RMA will contribute to the AAC of that portion of the planning area south of the Athabasca River. The current AAC for community use is 1 310 000 board feet (5 620 m^3) but a five-year demand study has indicated a shortfall of 3 100 000 board feet (13 310 m^3) per year for community needs. Timber from the Smith/Jarvie RMA will contribute to some extent in making up this shortfall.

Community demand for deciduous timber is low at this time, but would increase somewhat if Weldwood of Canada utilizes the white aspen in the Lawrence Lake RMA.

The white poplar in the Smith/Jarvie RMA will contribute in some measure towards the 2 100 000 board feet (9 010 m^3) AAC reserved for community use in that part of the planning area south of the Athabasca River.

Management Objectives

To provide timber on a sustained yield basis on lands designated as Community Farm Woodlot sites.

Management Guidelines

1. Timber sales should be limited to small short-term dispositions such as LTPs, CTPs and DTPs.
2. A 400 m buffer zone will be left around Long Island Lake. The buffer zone may be modified by timber cutting necessary for recreation development. Such cutting will be in accordance with established recreation plans.

Wildlife

This large and diverse area supports a good population of white tailed deer, particularly in the south where there is extensive agriculture. Deer population estimates are not available for this area, but the population almost certainly exceeds 0.25 deer/km^2, or some 450 deer in this RMA. There are areas of good to excellent moose habitat along the Athabasca and Pembina Rivers and in the Gray and Dancing Lakes area, but the remainder of the RMA is only poor to fair moose range. There are an estimated 790 moose in the RMA. There are isolated populations of elk north of Flatbush. The area has significant furbearer habitat in a number of locations: Rourke Creek-Spotted Horse Lake; Spruce Island-Long Island Lakes; the pothole lake complex east of Hondo; and lands between the Pembina River and Duck Creek lying north of French Creek and south of Chisholm. River otter have been taken in the Spotted Horse Lake area. The area supports an above average population of ruffed grouse. There is a great blue heron colony on Spruce Island Lake.

This area is an important big game hunting area, with an estimated annual potential harvest of 110 deer and 120 moose. Current harvests approach these figures (130 deer and 115 moose), but for deer at least, both the potential and current harvests are minimum estimates. This RMA provides an estimated 3 600 and 2 875 days of recreation hunting for deer and moose respectively. This area has an estimated annual harvest of about 7 000 grouse, providing an estimated 3 640 days of recreation. Trapping success is above average. White-tailed deer populations should increase in the northern part of this area as agricultural clearing continues, but populations may decrease in the south as large areas are cleared. The area will remain a popular hunting area due to the ease of access and its proximity to Edmonton.

Management Objectives

1. To maintain the present population of white-tailed and mule deer by protecting critical habitat.

2. To maintain present populations of furbearers, primarily by protection of riparian habitats, in order to ensure the continuation of the trapping industry insofar as it is compatible with the agricultural use of the area.

3. To maintain travel corridors for east-west movement of wildlife, particularly ungulates, between the Chisholm and Lawrence Lake RMAs, to ensure access to important winter ranges in the Athabasca and Pembina river valleys.

Management Guidelines

1. Access and utility developments, minerals exploration and development activities, timber harvesting and other forest management activities, along with other resource developments, may be restricted or modified to ensure the maintenance of areas of important habitat and environmental value which exist on lands within the breaks of the Athabasca and Pembina Rivers, and lands in the vicinity of Rourke Creek and Long Island and Spruce Island Lakes.

2. The great blue heron colony located on Spruce Island Lake is recognized as critical habitat. Resource development and other activities may be prohibited within a designated area around this colony. This area is to be delineated through a detailed analysis by the Fish and Wildlife Division as part of the operational follow-up to this plan.

3. A minimum of three ungulate travel corridors at least 800 m wide will be maintained by retaining Crown land corridors across the Smith-Jarvie RMA. Kilysth, Chisholm and Rourke Creeks are suggested routes for further investigation. Detailed field surveys will be required to delineate these corridors.

4. Detailed inventory assessments of the furbearer habitat requirements will be necessary as part of the input to the Lakeshoreland Management Plan for Long Island Lake.

5. Ungulate management will primarily focus on white-tailed and mule deer populations.

6. Existing registered traplines may require realignment as a result of dispositions in the area.

4. IMPLICATIONS

Introduction

A detailing of the anticipated consequences of the provisions of the Big Bend IRP on the present status of resources within the planning area helps in interpreting what the plan is likely to mean and also provides useful information for the monitoring and review stages of the planning process (the extent to which the expectation conforms to the reality.)

The number of potential implications arising from a plan of this scope are vast. Not all are foreseeable and many are of limited consequence. Accordingly, only those implications considered to be significant have been identified by the representatives of the participating agencies. All implications are based on the assumption that the plan is adopted as written. Implications arising from a number of specific policy recommendations are identified in the next chapter.

A distinction has been made between implications pertaining to the entire planning area and those specific to only some, or individual RMAs. Implications are tied to the resource categories used throughout the plan. Both general and specific sections are ordered alphabetically. In each case, implications particular to the identified resource are discussed, followed by implications stemming from the effects of provisions relating to that resource on each of the other resource categories.

General Implications

AGRICULTURE

In order to meet the objectives for other resources in the planning area, agricultural expansion is limited. There will, however, be a significant expansion of the size of the local agricultural community due to lands relinquished by the Crown for till cropping and improved grazing purposes.

Fisheries and Wildlife: The effects of agricultural expansion on habitats are detailed under Specific Implications.

Infrastructure: Agricultural expansion will involve increased servicing and access requirements.

Recreation: There will be some loss of Crown land suitable for extensive recreational uses, but opportunities for such uses are so considerable in the planning area that significant impacts are only likely to affect particular recreational activities on a site-specific basis.

Timber: Removal of land from the Green Area for agricultural expansion will result in the loss of productive forest land. Specific losses can only be identified after detailed site inventories of lands of agricultural capability have been conducted. While clearing of lands is taking place, forest protection concerns will increase due to debris disposal measures.

Watershed: Agricultural expansion will result in some loss of water quality as a result of sediment and nutrient loadings.

Wildlife: Unimproved grazing is permitted in all RMAs and will have negative effects on game populations by reducing food and cover available to wildlife as a result of the removal of forage and browse by cattle and the trampling of understory vegetation. Hunting opportunities will be adversely affected by loss of access to land (i.e. posting of grazing leases).

CULTURE

The requirement to protect historic resources will have implications for all industrial users but the nature of these implications cannot be estimated until the cultural resources of the planning area are identified and evaluated.

FISHERIES

Fishing opportunities within the planning area will remain as free from regulation as possible. However, increased angler harvest may necessitate more restrictive annual regulations in order to provide quality fishing. An angling closure in the spring to protect the vulnerable spawning walleye and pike is the most probable course of action.

A detailed inventory of the available fish spawning and rearing habitat will be required in order to provide useful information for the proposed Lakeshoreland Management Plans.

Provision for the designation of specific areas as important or critical fisheries habitat throughout the planning area has the potential to affect various other resources -- particularly agricultural activities, minerals exploration and development, and timber harvesting.

INFRASTRUCTURE

The lack of subdivision opportunities on Crown Lands (with the exception of possible cottage developments) will lead to increased pressures for industrial and recreational developments on private lands. In the long term there will be an intensification of the uses of private lands and any diversification of economic development opportunities will be more directly controlled by landowners through their own municipal decision-making bodies.

Fisheries and Wildlife: Effects of infrastructure developments are highly variable and could range from little or no effect where resource development is minimal, to major effects where intensive developments occur. Probable effects include the destruction of habitat, disturbance of wildlife, increased access resulting in increased fishing and hunting pressure, and the competing demands resulting from increased access in remote areas which make other uses (e.g., grazing, timber harvesting and recreational use) feasible.

Timber: Additional access will result in increased fire protection activities.

Watershed: Infrastructure developments associated with agricultural expansion activities will result in some loss of water quality as a result of sediment loadings. There will be demands for drainage and water control works on some newly available agricultural lands.

MINERALS

Throughout most of the planning area minerals activities will be conducted under standard operating conditions.

Continued exploration for and development of minerals resources will affect other resources -- particularly fisheries, recreation aesthetics, watershed and wildlife. The extent and nature of these effects cannot be estimated until minerals operations take place. Implications will be the same as described for the effects of infrastructure on fisheries and wildlife on page 81.

RECREATION

Opportunities for the development of commercial recreation developments will be limited to small-scale programs. No opportunities for creating new large-scale commercial developments will exist.

The plan creates openings for economic diversification through recreation and tourist development by providing opportunities for private sector investment within the planning area. Both facility-based, small-scale commercial recreation development and recreational cottage developments will be permitted in identified lake recreation areas.

Localized OHV use restrictions in the vicinity of industrial and reclamation areas should result in both increased safety for OHV operators and the protection of sensitive reclamation sites.

Some time or space segregation of mechanized and non-mechanized recreational users may occur. The area available for hunting may be reduced in recreation areas.

Timber: Expected increases in recreation and OHV use in all RMAs will increase the need for fire protection measures.

TIMBER

Increased timber harvesting south of the Athabasca River will help stabilize the local economy as a shortfall of 13 310 m^3 in community timber demand will be made up in this area.

Fisheries: There may be some direct effects on fish habitat through changes in runoff, water temperature, water quality (e.g., siltation) and so on.

Wildlife: Timber harvesting is a permitted activity in all RMAs. The effects of this harvest will be variable, depending on the species of tree harvested, reforestation practices, cutting patterns and so on. The plan proposes to minimize the effects by modifications in harvesting and reforestation practices designed to maintain or enhance wildlife habitat. Timber harvesting will be beneficial to certain species, particularly moose, hares, ruffed grouse and deer which are species which utilize the early successional stages of forest regeneration. Species which prefer mature forest (e.g., marten) will be adversely affected. The overall impact on wildlife is impossible to assess and likely will vary from RMA to RMA, depending on the amount and distribution of timber harvest in each area.

WATERSHED

Provision for the designation of specific areas as environmentally sensitive for such reasons as erosional susceptibility has the potential to affect various other resources -- particularly agricultural activities, minerals exploration and development, and timber harvesting. Lands within the breaks of the Athabasca and Pembina Rivers fall into this category.

Minerals: There is the potential that imposed modifications or restrictions may delay or make the cost of minerals activities prohibitive.

WILDLIFE

Provision for the designation of specific areas as important or critical wildlife habitat throughout the planning area has the potential to affect various other resources -- particularly agricultural activities, minerals exploration and development, timber harvesting, and recreational activities. Areas already identified in the plan will have implications on all these uses. Where these are anticipated to be significant, they are identified under Specific Implications.

Timber: Any modifications, restrictions or prohibitions of timber harvesting necessary to safeguard important or critical wildlife habitat may entail a loss of AAC or increased costs to the operators.

Specific Implications

AGRICULTURE

In the Smith-Jarvie RMA almost 90 sections of land will be transferred from the Green to the White Area, while almost 40 sections of land (without till cropping or improved grazing capability) will be transferred from the White to the Green Area. On balance, almost 50 sections of land will be added to the White Area. The actual amount of land which will be sold can only be determined after detailed site inventories have determined how much of the 90 sections of land being made available for agricultural expansion have till cropping or improved grazing capability.

In the Lawrence Lake RMA, almost 190 sections of land will have a predominantly agricultural emphasis. About 40 per cent of this area contains lake recreation areas, important wildlife habitats and lands of environmental value or sensitivity which will not be disposed. Additionally, almost one quarter of the area will also remain vested in the Crown, but dispositions to grazing associations will be issued on suitable lands. Of the remainder (approximately 72 sections), the actual amount of land which will be sold can only be determined after detailed site inventories have identified lands of till cropping or improved grazing capability and after other resource sectors, such as timber, have been considered. Because the southern portion of the Lawrence Lake RMA will remain in multiple use, there will be limited opportunities for expansion of agricultural lands by landowners or producers located outside the planning area east of the RMA.

In the Smith-Jarvie and Lawrence Lake RMAs, opportunities for expanding till cropping and increasing the size of existing holdings will be available to many producers. Lands designated for the expansion of agricultural operations are considerable distances from some producers in the planning area. This is particularly the case in the southern portion of the Smith-Jarvie RMA where there are limited amounts of remaining Crown land, and in the area north of the Athabasca River where only limited opportunities to expand existing farms are provided.

In the Smith-Jarvie RMA, it is not known whether the amount of land being made available for agricultural expansion will be sufficient to allow Smith to develop into a viable agricultural service centre (i.e. agri-business, banks and schools).

Fisheries: Development of land for agricultural use in the Lawrence Lake and Smith Jarvie RMAs will result in increased erosion and nutrient input to the natural water courses. This is caused by cattle trampling streambanks, drainage from feeding and wintering yards for the livestock, increased rate of runoff and fertilizer input from cultivated fields. Eutrophication will be accelerated and the quality of the fish habitat and, hence, production, will decline.

Additional problems will arise from the physical destruction of spawning habitats from development of the land and access, and runoff and seepage of chemical products (herbicides, pesticides, oils, etc.) into watercourses.

Infrastructure: Operational decisions concerning the location of access and servicing requirements for industrial operations will be affected by the requirement encouraging a grid system servicing infrastructure in recognition of the eventual agricultural use of that portion of the Lawrence Lake RMA to the north of Highway 2.

In both the Smith-Jarvie and Lawrence Lake RMAs, the sequence, timing and funding of access and servicing requirements for newly-opened agricultural lands will require determination at the operational level. Liaison between the ID 17 administration and government agencies will be required.

Wildlife: Improved grazing is a permitted activity in the Chisholm, Lawrence Lake and Smith-Jarvie RMAs. Habitat changes caused by grazing improvements will have a major effect on wildlife populations. Species intolerant of agricultural activities such as moose and ruffed grouse will decline, while species such as deer and sharptailed grouse will probably increase in partially cleared areas. It may be possible to reduce effects on wildlife by such measures as carefully planning clearing patterns, using fences which permit the movement of big game and maintaining important wildlife habitat areas in a natural state.

Lawrence Lake

Agricultural expansion in the Lawrence Lake RMA represents a major land use change and will have significant impacts on wildlife populations and the recreational and commercial uses of wildlife. The magnitude and nature of the impacts will depend mainly on the amount, type and distribution of agricultural use, and will vary between species. In general, there will be a shift from moose to deer as the principal big game species and there will be a decrease in upland bird populations. Some registered traplines will be reduced in size or eliminated -- local resident traplines will offset this loss somewhat. Agriculture-wildlife conflicts can be expected to increase and predator control measures and damage compensation payments will be required.

Loss of unrestricted access to land will be a major consequence of the increased agricultural activity in this area. The overall effect on hunting is difficult to assess, but it is likely there will be a major decline in hunting activity by non-local and subsistence hunters. Areas now available without restriction to these hunters will become unavailable because of problems associated with identifying leased and patent land and obtaining permission to hunt. The quality and nature of the recreation experience will also change; hunters become guests of the lessee and this will restrict their activity (e.g., camping, off road vehicle use, size of hunting parties may be restricted), as well as providing a somewhat less pleasing experience. The freedom and wilderness experience sought by many hunters will be lacking. As a result, hunters may choose to hunt elsewhere on Crown land rather than put up with these additional problems. Hunting by treaty Indians will decline. There will, of course, be an offsetting increase in hunting by the local landowners who may have less difficulty in securing access.

Major effects on specific wildlife species in the area north of Highway 2 are anticipated to be as follows:

Moose -- The area intended for agricultural expansion contains more than 25 per cent of the excellent moose habitat in the planning area. Much of the best moose habitat is upland aspen forest, the area which also has the best agricultural potential.

Aerial surveys suggest a present population (1980-1983) of 0.8 moose/km^2 (2.1 moose/sq. mi.) in the area intended for agricultural expansion. The estimated harvestable surplus is 15 per cent, or about

60 moose per year. This represents a potential 1 500 hunter days - more than 15 per cent of the total recreation moose hunting available in the planning area.

Agricultural practices have a severe negative impact on moose. Where substantial proportions of land are in agricultural production moose are virtually eliminated. The magnitude of the impact can only be assessed when the probable extent of agricultural activity is determined. However, assuming that about 50 per cent of the area north of Highway 2 will be utilized for agriculture, moose populations in the area would be expected to decrease to less than half the present level. This would result in a loss of at least 800 recreation hunter days and a harvest reduction of about 30 moose. In the area designated for large-scale grazing a reduction in the impact of agricultural development on moose may be achieved by adopting appropriate guidelines and retaining key habitat.

Deer -- Aerial surveys indicate a population of about 0.4 deer per km^2 (1.0 deer/sq. mi.), with a ratio of about two white-tailed deer to one mule deer. Agricultural activity will have an initial positive effect on deer populations, particularly on white-tailed deer. Ideal deer habitat would be created by an interspersion of cleared areas seeded to perennial forage crops such as alfalfa, large areas of residual bush and a few areas of cereal crops. However, if extensive tracts are cleared for cereal crop production or pasture use, deer populations will be adversely effected.

It is anticipated that sufficient residual forested areas will remain (e.g., farm wood lots, areas unsuitable for agriculture, important wildlife habitat) to maintain or increase present deer populations. There will therefore be a shift of hunting pressure from moose to deer as a result of the agricultural activity.

Furbearers -- The area designated for agricultural development includes all or part of 13 registered traplines. Five of these could be severely affected by agricultural development, losing more than half their resource area, while another five may be significantly affected, losing between 17 and 44 per cent of their resource area. The remaining three will not be affected significantly as they either lie mainly outside the RMA or within wildlife interest areas or recreation areas. Areas in private ownership will be removed from the trapline, and when a trapline is no longer viable due to disposal of land, it will be necessary to adjust boundaries or eliminate traplines. Trapping by local residents will tend to offset this loss of registered trapping areas; the overall impact is impossible to assess.

Clearing for agricultural use will affect upland furbearers negatively. Lynx, which is the second most important species in terms of revenue to the trapper, will be virtually eliminated from agricultural areas. This may be offset by an increase in coyote populations, since coyotes are most abundant in fringe agricultural areas, particularly areas where livestock carrion is available. Fisher and marten, upland species which reach their southern limit of distribution in this area, will be eliminated.

Agriculture-wildlife conflicts will increase as a result of this expansion. Wolves and black bears are present throughout the area and these species can cause a number of problems. Predation on livestock, damage to apiaries, crop depredation and nuisance problems will all occur. Control of problem wildlife will be necessary. Cost of control measures as well as economic losses caused by predators will have to be considered in assessing the economic viability of the agricultural programs in this area.

Upland Game -- The principal upland game birds in the area, the ruffed and spruce grouse, will be negatively affected by any agricultural development. This area is conservatively estimated to have produced a harvest of 1 800 grouse in 1977 (10 per cent of the total harvest in the planning area). Improved access as a result of agricultural expansion will make the area easier to hunt, but clearing will reduce the bird population. The overall impact is impossible to determine, but will likely be negative.

Waterfowl -- In general, agricultural activities will be detrimental to waterfowl. There will probably be drainage of waterbodies, loss of nesting cover and destruction of nests and broods by agricultural activity. Harvests, paradoxically, are likely to increase as a result of increased access, increased human population and the attraction of migrants to crops. The effects of agricultural activity can be minimized by retaining waterbodies and riparian areas to the Crown, and by limiting drainage. Specific habitat improvements (e.g., water control structures, nesting islands) would also reduce the impact of agriculture.

Smith-Jarvie

In the Smith-Jarvie RMA the general impact of agricultural expansion on wildlife populations will be as for the Lawrence Lake RMA, although on a lesser scale. Moose habitat is not as good in this RMA as in the Lawrence Lake RMA, but is still better than that in the planning area as a whole.

There are 12 registered traplines which will be affected by agricultural expansion. Of these, eight will lose more than 50 per cent of their resource area to agricultural development.

INFRASTRUCTURE

In the North Athabasca RMA, the recommendation for improved east-west access will significantly improve ease of access with the Calling Lake area. This will benefit both local residents within and outside the planning area, as well as tourists and industrial users.

RECREATION

The major implication of the provisions of the plan for recreational uses are identified by RMA as follows:

Vega-Fawcett: Recreational use will be limited with a continued focus on extensive activities.

Chisholm: There will be increased opportunities for a broad spectrum of recreation users in the Rourke Creek area with a primary emphasis on land-based recreational uses.

North Athabasca: Recreational use will increase significantly as a variety of intensive and extensive recreational opportunities are provided. The focus will be primarily, but not exclusively, on water-oriented recreational uses.

Lawrence Lake: Recreational use will increase significantly as a variety of intensive and extensive recreational opportunities are provided. The focus will be primarily, but not exclusively, on water-oriented recreational uses.

Organized groups and municipal users will have the scope to provide additional public recreation developments and opportunities in the Long, Narrow and Bolloque Lakes recreation area.

Smith-Jarvie: Recreational use will focus on intensive opportunities targeted at organized groups and municipal users on Long Island Lake. These users will have the scope to provide additional public recreation developments and opportunities in the Long Island Lake area and will need to provide operational and site planning direction for such developments by means of recreation plans.

Agriculture: Grazing opportunities will be limited to a varying degree in all recreation areas. In the case of the Long Island Lake recreation area any opportunities for till cropping will be precluded.

Infrastructure: Access and servicing requirements will be required in the Rourke Creek recreation area, but the identified recreation priority will likely lead to significant restrictions in the event that any utility corridor crossings are proposed for this area.

Restrictions on industrial developments in the vicinity of all lake recreation areas will limit infrastructure developments.

Minerals: Minerals activity is restricted in all lake recreation areas (including land up to 1.6 km (1 mi.) from the shoreline and land visible from the shores). Under some circumstances minerals activity may be prohibited in order to maintain recreational values.

Timber: Buffers surrounding recreation areas in the Chisholm, North Athabasca and Lawrence Lake RMAs will remove some merchantable timber from AACs.

Wildlife: While recreation developments in recreation areas will be designed to reduce their impact on habitat, indirect effects, such as disturbance, increased fishing and hunting pressures and increased use of riparian areas will all affect fish and wildlife populations. The Rourke Creek recreation area has the potential to have major effects on wildlife resources and their utilization. There will be a loss of habitat (clearing of trails, campsites, access roads), increased harassment or disturbance, increased fishing and hunting pressure and a potential for increased vandalism and theft on registered traplines.

TIMBER

Should Weldwood decide to utilize deciduous timber in the northern part of the Lawrence Lake RMA where agricultural expansion will occur the deciduous timber will be depleted. Other resources will be affected and there will be a shift in local demand to other areas.

Agriculture: If Weldwood decides to utilize deciduous timber north of the old Highway 2 alignment there will have to be a high degree of co-operation to ensure that timber harvesting and agricultural expansion are co-ordinated and phased in a timely manner.

Wildlife: If Weldwood decides to utilize deciduous timber in the Lawrence Lake RMA wildlife species requiring mature forest will be negatively affected. However, if sufficient winter habitat is available and if the cutting pattern provides a good interspersion of cut and uncut areas, moose and deer populations may increase.

WILDLIFE

Minerals: Minerals activities might be restricted or prohibited on lands in the vicinity of blue heron colonies on Hubert, Orloff, Meyer and Spruce Island Lakes. The only mineral resource in the vicinity of these areas is natural gas. All other minerals, including quarriable materials and petroleum, have low potential.

5. POLICY INITIATIVES

A number of policy level issues require addressing as a prerequisite to actualizing the intent of the plan. These issues have been identified by participants in the planning process as significantly affecting the interactions and relationships between various resource sectors and uses. They require resolution in order for the plan to be truly integrated and to provide the appropriate level of direction and guidance for the use and management of Crown lands and resources within the sub-region.

There is a distinction between those issues which are relatively straightforward in intent and execution, and those which raise considerations that require assessment in a provincial context and which perhaps can not, or should not, be addressed solely in a sub-regional context. The first three items below fall into the first category. The direction provided is relatively prescriptive, and if the plan is adopted, will be implemented. The remaining items are couched in the form of recommendations for further action. Endorsation of the plan by the Economic Planning and Resource Development Committee would simply constitute approval-in-principle that these issues should be addressed. Additional follow-ups would be required after adoption of the plan, before these recommendations could be put into effect.

GREEN/WHITE AREA BOUNDARY

Recommendations

1. The Green/White Area boundary will be realigned to include agricultural expansion areas within the White Area and multiple use areas within the Green Area.

2. The Green/White Area boundary changes will take place in two stages. Initially, the realignment will be broadly coterminous with the Smith-Jarvie RMA. Subsequently, a major boundary change will be required in the Lawrence Lake RMA to the north of Highway 2, after detailed site inventories have determined the extent of lands intended for agricultural expansion.

Guidelines

1. All SO designation lands in Multiple Use RMAs will be transferred to the Green Area (S7 FMU).
2. All Green Area and SO designated lands in the Smith-Jarvie RMA will be transferred to the White Area.
3. Detailed site inventory work will be required in designated areas on the periphery of the Lawrence Lake RMA (see Figure 3) to ensure that lands remaining in or returned to the Green Area contain no accessible lands of till cropping capability. Any modification of the boundary line should generally not exceed the 1.6 km (1 mi.) area of consolidation depicted in Figure 3.
4. In the Lawrence Lake RMA north of Highway 2, detailed site inventory work will be required in order to delineate lands of agricultural capability. The integration of agricultural expansion with other reource considerations will take place at the operational level. Once the extent of agricultural lands are identified, these lands will be transferred from the Green Area to the White Area.

Rationale/Explanation

Realignment of the Green/White Area boundary within the planning area is necessary to place lands identified for an agricultural and settlement emphasis and lands identified for a multiple use emphasis in the correct administrative areas. Because the Big Bend IRP was one of the first plans to be initiated,it was not supported by comprehensive and relatively sophisticated background capability inventories such as the Physical Land Classification and Ecological Land Classifiction. Consequently, it is necessary that the final delineation of the Green/White Area boundary be done at the operational level.

Implications

A reduction in the size of the permanent forest land base in the Big Bend area with a corresponding increase in the amount of land available for the local agricultural community. The vast majority of lands relinquished from the Green Area will come from the S7 FMU - the eastern portion of this FMU will exist as an outlier, entirely surrounded by the White Area lands. To the north of the Athabasca River only limited areas of land will be released from the S5 FMU, primarily in the area north of Smith. Ultimately, the agricultural productivity of the Big Bend area will increase significantly in response to the expanded land base. At the same time, there will be expectations that existing demands for such resources as timber and wildlife will continue to be met.

GENERAL AND DETAILED RECREATION PLANS

Recommendation

The existing procedure for making an application for the recreational use of public lands will be revised to incorporate a standard requirement for the submission of General and Detailed Recreation Plans.

Guidelines

1. The specific content of the General and Detailed Recreation Plan will be detailed by the AFS and Public Lands as part of the operational follow-up to this plan.

2. The basic requirements of General and Detailed Recreation Plans will apply to both private and public sector proponents.

3. General Recreation Plans will be designed to give a broad conceptual overview of the proposed development, in order that both the economic viability of the proposal and the compatibility of the proposal with other resource interests in the vicinity can be quickly assessed.

4. Detailed Recreation Plans will be designed to contain detailed specifications of the proposed development with working drawings, together with a detailing of any measures required to mitigate possible environmental impacts.

5. In preparing the requirements for the General and Detailed Recreation Plans, the involved agencies will:

   -- recognize that the financial and time costs to proponents should be minimized; and

-- consider existing AFS guidelines relating to the recreation facility development process.

Rationale/Explanation

General and Detailed Recreation Plans are intended to ensure that both private and public recreation developments are developed in a manner compatible with other resources. They are a key to achieving the recreational intent of the various recreation areas identified in the planning area and, along with the proposed Lakeshoreland Management Plans, are the means by which the integration of resource uses will be carried down to the level of site planning.

Implications

Resource management agencies will be required to formalize and standardize the existing internal recreation resource development procedures. Leaseholders will be subject to a greater degree of scrutiny than has been the case in the past when recreation developments are proposed. Some time and financial costs will be incurred in preparing the plans. Developments incompatible with the mix of resource uses taking place in any given area will not take place.

LAKESHORELAND MANAGEMENT PLANS

Recommendation

Lakeshoreland Management Plans will be prepared for all recreation area lakes within the Big Bend sub-region.

Guideline

Lakeshoreland Management Plans will:

-- develop a conceptual design plan for each lake which will provide overall direction for the optimization of land and water resource activities within the immediate environs of the various lakes within the context of direction established by this plan;

-- identify sites with potential for facility-based small-scale commercial recreation develoments on lakes with an intensive and institutional recreation focus;

-- identify sites with potential for recreational cottage development on Fawcett and Lawrence Lakes and formulate guidelines regarding the number, extent, size and design of such developments.

-- indicate possible locations for other recommended recreation facilities and programs;

-- assess the capability and carrying capacity of the lake and shore land by means of an analysis and evaluation of both socio-economic and biophysical factors; and

-- involve all interested departments, agencies and publics.

Rational/Explanation

Lakeshoreland Management Plans are the means by which the recreation intents for the various lake recreation areas will be achieved. The provision of opportunities for particular recreation developments and activities will take place within an established operational framework rather than developing in an incremental and ad hoc fashion. This will ensure that the integration of recreational resource management concens is carried down to the operational level.

Implications

Lakeshoreland Management Plans will ensure that lakeside developments take place in an orderly manner and that recreational uses are optimized in the various riparian settings. They imply a major commitment to long-term planning. Public involvement in the planning process will be required as many lakes have private land abutting them, which will have to be considered in the planning process. Major manpower and monetary commitments will be required to support the planning process.

IMPROVED GRAZING

Recommendation

There should be a thorough provincial policy review of the means of disposing lands suitable for improved grazing in the White Area. Such a review should be broad ranging and address:

- -- the complex of factors related to suitability and establish firm guidelines or procedures for identifying such lands, and
- -- the desirability and practicality of permitting a discretionary option to purchase when lands intended for improved grazing purposes are disposed.

Rationale/Explanation

Lands intended for improved grazing purposes are disposed of by means of lease or permit, with no option to purchase unless the lands are included as part of a Farm Development Lease. The management intent statement for the Smith-Jarvie RMA priorizes agricultural uses. Private ownership of improved grazing lands would be consistent with this intent. The ramifications of this issue, however, are considerable and deserve to be evaluated in a provincial context. Some of the major pro and con implications of permanently disposing of such lands are noted below.

Implications

Pro: Farmers would have the security of tenure necessary to justify and finance expensive capital capital expenditures for land improvements. Ownership would make the securing of finances easier and remove some of the risk involved in investing monies to make improvements to the land base which may not be recouped when the lease expires. This would substantially increase confidence, commitment and independence within the local farming community. The province may save on farm subsidy costs administered through the Range Improvement Program.

Con: There would be a loss of Crown control over marginal agricultural land. In some areas of the province (particularly the south), this might involve very large tracts of land. There would also be severe implications for fisheries and wildlife resources. A great deal of important and critical habitat might be lost and access denied to both consumptive and non-consumptive users over large areas of land.

Other potential problems include subdivision for residential or recreational use (such as acreages and cottage lots), commercial uses (such as ski slopes and private hunting clubs), or other uses which may have major implications to other resources uses. There would be no guarantee the land would remain in agricultural use and if it did there could be no Crown control over such practices as clearing patterns and grazing pressure. There would be an increase in requests for expensive developments such as drainage structures, stream improvements, and better roads and services.

OHV CONTROLS

Recommendations

Legislation providing for effective time and space controls over OHV use should be enacted.

Rationale/Explanation

The provisions of the Big Bend plan provide considerable opportunities for OHV use and identify a number of areas where restrictions are required. Present legislation allows only for the control of OHV use by hunters under the Wildlife Act, or in Forest Land Use Zones and Forest Recreation Areas under the Forest Act. In addition, the designated forest vehicle routes proposal provides a framework within which various access routes restrictions may be imposed. None of these mechanisms, however, currently provides an effective means of controlling where and when OHVs operate.

Implications

Effective controls on OHV use will have very positive implications for other resources uses and resources, particularly other recreation users and industrial resources users, fisheries and wildlife resources, and environmentally sensitive areas.

There are also positive implications for OHV users as adequate and sufficient provision of opportunities for mechanized recreation pastimes must be a prerequisite to the imposition of restrictive controls. There will, however, be adverse impacts to OHV users in certain areas where the freedom and spontaneity to travel freely may be curtailed.

Additional enforcement will be required to ensure compliance and there will be costs involved in providing alternative opportunties for OHV use. Government resources will also be required to formulate and administer exemptions clauses -- for example, for trappers or minerals exploration.

The possibility of establishing a precedent for the increasing bureaucratic control over public users of Crown Lands is perhaps the most far reaching and sensitive implication. For example, horseback riding, boating, hiking and camping also have varying degrees of impact on the land base.

COMPENSATING USERS OF CROWN LAND

Recommendation

A comprehensive and consistent provincial policy addressing the issue of compensation for users of Crown lands should be produced.

Rationale/Explanation

The plan's provisions for expanding agricultural lands within the planning area will have various impacts on numerous resource users. At present, there are many inconsistencies in the way in which users of Crown land are compensated or not compensated when adverse changes which affect their interests occur. For example, holders of grazing leases are compensated if petroleum and natural gas operations are conducted on their land, but if other uses are intended for the area their lease can be cancelled at any time without compensation. Similarly, trappers may apply for compensation, but only on registered traplines adversely affected by the activities of the conventional petroleum and natural gas industry.

Other licensed users of Crown land such as fishermen and hunters are compensated neither for deleterious land use changes, nor adverse impacts resulting from the activities of other resource users.

The overall issue of compensation needs to be addressed in a holistic fashion. It is certainly not simply a question of ensuring that compensation measures become much more widespread. If is at least debatable that some are too widespread now -- cases arise, for example, of leases being applied for simply for their compensation value. The basic principles which need to be considered are those of fairness across the board and the desirability of restitution where, in fact, a loss has occurred.

Implications

Existing inequities in the way in which the issue of compensation is addressed will be addressed.

6. PLAN MANAGEMENT

General administrative procedures and mechanisms required for plan management, monitoring and amendment are outlined in this section. Detailed program and project implications and associated benefits and costs incurred as a result of this plan will be contained in a supplemental implementation document (N.E. Regional Resource Management Committee, in prep.). This document, subject to approval by the Government of Alberta, will complement the plan.

General Administration

The Big Bend Sub-Regional Integrated Resource Plan will be made operative within the terms of appropriate legislation, regular programs and activities of the government, operational plans, specific developed projects, referral processes and administrative bodies. The RMAs provide a means of processing applications for new public land dispositions within the planning area. Existing systems for referral and interdepartmental review will apply to the plan. Resources will continue to be administered by the departments responsible, in line with the provisions of the plan including resource management guidelines and any subsequent operational plans.

Participating government management agencies will have several responsibilities to ensure the effective delivery of this plan. It will be their responsibility to deal with any conflicts or concerns with respect to implementation or interpretation of any of the plan's provisions. The responsibilities are outlined by subject area below.

Referral Systems: Participating government management agencies will ensure that existing referral systems of the Alberta government (e.g., Alberta Energy and Natural Resources, 1981a, 1981b) are adequate to encompass all affected or concerned agencies.

Plan Monitoring: The Big Bend Sub-Regional Integrated Resource Plan will be reviewed annually by the North East Regional Resource Management Committee (NE RRMC) to:

-- assess the relevancy of the stated resource objectives in light of changing conditions;

-- assess the resource management guidelines and referral procedures;

-- assess agency operational plans to ensure their consistency with the resource management area intents, objectives and guidelines; and

-- recommend amendments to the IRP and future actions required to maintain or promote government resource management activities in the planning area.

An annual report will document changes in the plan. The report will also highlight the previous year's activity in the planning area, including the number, type and location of referrals and what conflicts or concerns were addressed and resolved. The report will also indicate what might be expected to be accomplished in the planning area during the next year. The report may be deferred if it is not needed because of a lack of activity or progress on government resource management objectives within the planning area.

A major plan review by the NE RRMC will normally occur at five-year intervals to facilitate:

-- a comprehensive assessment of all aspects of the plan, including but not limited to broad resource management objectives, and resource management area boundaries and intents;

-- a public review on the same basis as the public has been involved in the development of new integrated resource plans; and

-- a statement recommending amendments to the plan and future actions required to maintain or promote government resource management activities in the planning area.

A report will document all amendments. Major plan reviews may be undertaken more or less frequently than every five years if major resource policy commitments or developments of program initiatives require them.

Amendment Procedures: Changes to the planning area boundary, broad planning area resource management objectives, the refined land-use zoning, and the resource management area boundaries and intents will require major amendment to the plan. An amendment to the plan may be required as a result of an annual review, major five-year review, government request or as a result of a request from an individual, group or organization outside the government. Proposed amendments to the plan from outside the government should be made by formal application to the Assistant Deputy Minister of the Resource Evaluation and Planning Division, Alberta Energy and Natural Resources.[4] Opportunities for public review of proposed amendments to the plan will be provided before changes are approved by the government. Amendments which entail a major policy decision or a change to the basic intent of the plan may be forwarded by the associate minister to cabinet committee for approval.

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[4] Guidelines for preparing requests for amendments to integrated resource plans are available upon request.

APPENDIX

MINERALS DATA - REFERENCES AND EXPLANATION OF CALCULATION METHODS

Detailed information on minerals resources is given in introductory statements to the minerals resource in each RMA. All data was supplied by the Mineral Resource Planning Section. The following list describes briefly where this information came from and how it was used.

- 1981 petroleum and natural gas producution and reserve figures come from, Energy Resources Conservation Board (ERCB) 82-18, Alberta's Reserves of Crude Oil, Gas, Natural Gas Liquids, and Sulphur, at December 31, 1983.
- 1981 dollar values are estimated averages and come from the ERCB publication, Conservation in Alberta, 1981.
- Numbers of gas plants and producing and capped wells come from the February 1983 Well Map (Mineral Support Branch).
- Lengths of major pipelines were measured from the February 1, 1983, ERCB map, Petroleum and Natural Gas Fields and Main Oil and Gas Pipelines of Alberta.
- Volumes of petroleum and natural gas attributed to each RMA were calculated on a pro-rationed-area basis, i.e. both the production and reserves of a field were assumed to correspond to that percentage of the field contained within the RMA. In cases where there were no producing wells in an RMA, production is given as zero, but reserves are still given on the pro-rationed basis.
- Oil sands data come from, ERCB 82-18, Reserves, 1981.
- Coal data come from, ERCB 82-31, Reserves of Coal, Province of Alberta at 31 December, 1981.

GLOSSARY

Aeolian Deposits	Surficial deposits comprising materials transported and laid on the earth's surface by the wind.
Aggregate	Any unconsolidated surficial material, generally restricted to sand and gravel, but may include clays.
Annual Allowable Cut	Total amount of timber, by volume or area, that may be harvested in one year based on sustained yield.
Carrying Capacity (Range)	Maximum animal numbers which can graze annually on a given range for a specific period of time, without inducing a downward trend in forage production, forage quality or soil.
(Recreation)	Multidimensional management concept involving the determination of use limits. Limits are not absolutes, but reflect a fluctuating level of dynamic equilibrium which is a product of interactions between three determinants - the biophysical resource base, the resource user and the resource manager.
Commercial Recreation Development	Recreation developments or enterprises undertaken by the private sector.
Critical Habitat	Habitat crucial to the size, distribution or stability of a wildlife or fish population. Loss of such habitat would result in a drastic decline or extirpation of a population.
Crown Land	Public lands held by the Crown in right of Alberta.

CTP (Commercial Timber Permit)	Timber permit authorizing the cutting of coniferous timber where a surplus annual allowable cut exists in an FMU. Permits are short term, normally one to three years.
Community Farm Area Woodlot	Reserves of Crown land within the White administered through the Slave Lake Forest. They are set aside for the purpose of establishing a continuing supply of forest products for local community needs and are basis. Dispositions are limited to small-scale timber permits.
Depletion Cutting	Harvesting of merchantable timber on a one time basis prior to a land use change. Also known as liquidation timber harvesting.
Disposition	Dispositions may be of a permanent nature - as through the sale of land, or temporary - when rights to particular lands or resources are granted for a finite period of time. The most common forms of disposition are by sale, lease, licence or permit.
DTA (Deciduous Timber Allocation)	Timber disposition guaranteeing the holder a constant annual allowable cut expressed in terms of area of pure deciduous stands.
Endangered Species	Any indigenous species of fauna or flora whose existence is threatened with immediate extinction through all or a significant portion of its range, owing to the action of man.
Environmental Values	Value held by society toward any part or quality of the biological or natural physical environment perceived as meriting protection, preservation or retention.
Eutrophic	Water in which the production of organic matter is high as a consequence of a large supply of nutrients for the plants.

Exploration and Development	Umbrella term, used in reference to the Minerals industry, to describe all work associated with the identification and extraction of mineral resources. Includes production unless otherwise stated (see Production).
Extensive Recreation	Non-facility oriented recreation covering a large area. Examples are cross-country skiing and trail biking. The label extensive bears no relationship either to numbers or impacts.
Facility-Based Small Scale Commercial Recreation Development	Programs or developments providing services and facilities for a fee. These are generally minor operations requiring modest financing and catering to limited numbers of people. They are frequently seasonal in nature. Examples would be semi-serviced or serviced campgrounds; grocery and food concessions; boat rentals, launches and mooring facilities; rental cabins and small lodges.
Forest Land Use Zone	Zone established by order-in-council allowing the AFS to establish land use restrictions. Forest Land Use Zones are normally used to control recreational activities.
FMA (Forest Management Agreement)	Agreement between the Province of Alberta and a timber company granting the authority to manage and harvest timber. FMAs are usually contingent on the company agreeing to construct a large wood processing facility and to manage the holding by sound forest management principles approved by the AFS. FMAs are awarded by cabinet following public hearings on proposals by interested companies.
FMU (Forest Management Unit)	Forested region of the province is divided into 10 forests for administrative and management purposes. These forests in turn are divided into sub-units called FMUs which are managed as separate entities on a sustained yield basis. FMUs are controlled by a management plan which includes such information as growing stock, allowable cuts, and a

	timber harvest development program. FMUs are managed to allow periodic cutting of timber volumes without disturbing the balance between forest growth and depletion or impairing the maintenance of the forest in perpetuity.
Green Area	Established in 1948 by order-in-council. It consists basically of the non-settled forest lands and covers about 50 per cent of the province. Public lands in the Green Area are managed primarily for forest production, watershed protection, fish and wildlife management, and recreation. Permanent settlement, except on legally subdivided lands and agricultural uses other than grazing have been excluded.
Important Habitat	Habitat not as essential to a wildlife or fish population as critical habitat, but still of some particular significance - either because it supports a notably higher population than surrounding lands or because it has a high seasonal value.
Improved Grazing	Grazing lands that have had productivity enhanced by clearing and the establishment of tame forage stands and/or various range maintenance projects such as brush regrowth control, crossfencing, drainage, etc...
Industrial	Word denoting any resource development activity associated with harvesting, production, manufacture or processing of goods. Most commonly used in joint reference to the timber and minerals industries, i.e. industrial access, industrial users.
Intensive Recreation	Facility-oriented recreation covering a small area. Examples are campgrounds and boat launching facilities. The label intensive bears no relationship to either numbers or impacts.

Intensive Recreation Developments	A moderate or high level of site and facility development, designed to cater to many recreation users. A supporting servicing infrastructure may be required.
Lacustrine Deposits	Material originating from lake sediments.
Lakeshoreland Management Plan	Means of providing direction for the control of land uses and activities within the immediate environs of a lake. Management plans traditionally consider both socio-economic and biophysical factors in attempting to achieve an optimum balance between varying, and frequently competing, demands on the resource.
Large Scale Commercial Recreation Development	Major capital intensive projects involving the construction of sizeable facilities and used by large numbers of people. Examples would be hotels, motels, four season resorts and condominium developments, usually with associated recreation and service facilities.
Large Scale Grazing	Provincial grazing reserves, grazing associations, or community pastures which exceed an area sufficient to graze 200 animal units.
Limited Facility-Based, Small-Scale Commercial Recreation Development	Programs or developments involving minimal facility development which provide recreational opportunities for a fee. These operations generally involve limited numbers of people and are usually seasonal in nature. Examples would be outfitting, guiding and river-rafting operations.
LTP (Local Timber Permit)	Timber permit issued normally to local residents authorizing the cutting of coniferous or deciduous timber for volumes up to a maximum of 750 m^3 coniferous or 1 500 m^3 deciduous and expiring April 30 of any year.
Marginal Agricultural Land	Lands within CLI agriculture capability classes 4 or 5. Organic soils are also included if the ph is 5 or higher and the depth is no more than 3 feet.

This definition is intended as a guide to facilitate the identification of lands capable of improved grazing or forage production in the Smith-Jarvie RMA and the Lawrence Lake RMA north of Highway 2.

Mechanized Recreation	Recreation involving powered aids. Examples are power boats, OHVs and ultralight aircraft.
Non-mechanized Recreation	Recreational activities that do not involve or require the use of mechanized equipment.
OHV (Off-Highway Vehicle)	Motorized vehicle used for cross-country travel on land, water or snow, including fourwheel drive vehicles, motorcycles, track vehicles, snow vehicles, but not motor boats.
Organic Deposits	Surface deposits of material originating mainly from plants; in this region, primarily peat deposits.
Patent Land	Privately owned land.
Permanent Industrial Access	Industrial road that is structurally sound for all season access and that has a life expectancy of two years or more (AFS road classes I to IV. Note: Depending on the resource user, Class IV roads may be constructed to permanent or temporary standards).
Planning Act (1977)	Statutory instrument detailing the means by which and the manner in which the planning for and development of lands shall be conducted in Alberta. Its purpose is to achieve the orderly, economical and beneficial development and use of land and patterns of human settlement consistent with the maintenance and improvement of the quality of the physical environment. The Crown is not bound by the Planning Act, but occupants of Crown land, other than the Crown, are. Accordingly, development permits for private developments falling within the purview of the act must be issued by the appropriate mandated local authority.

Primitive Recreation Developments	Facilities having a mimimum level of site development, such as campground wih limited access (foot or boat only), and only basic facilities (pit toilets, well for water, possibly a simple cook shelter, and unimproved campsites).
Production	Used in reference to petroleum and natural gas operations to describe those aspects of the operation taking place after exploration (geophysical, temporary access construction, wildcat drilling) and development (permanent access construction, development drilling, pipeline construction). Production refers to access and other land reclamation, well completion, well servicing and extraction pumping.
Public Recreation Development	Recreation developments or programs undertaken by any level of government or any government agency or agencies and including any private sector contractual developments commissioned by a government.
Quota	Quotas convey coniferous timber rights expressed as a percent share of the annual allowable cut for a given FMU. Quotas are used to allocate commercial quantities of timber within specified areas to individual companies and have a 20-year term.
Quota Licence	Timber licence granting the authority to cut timber within a quota or a DTA.
Rare Species	Indigenous species of fauna or flora that, because of its biological characteristics, or because it occurs at the fringe of its range, or for some other reason, exists in low numbers or in very restricted areas, but is not a threatened species.
Reclamation	Post-disturbance modification of the landscape to a desired state. This usually entails maintaining a productive and balanced ecological state resistant to environmental deterioration and consistent with aesthetic values.

Recreation Areas	Small portions of the planning area priorized for recreational uses and intended to mmodate a variety of extensive and nsive recreation developments. These are shown in Figures 2 and 3.
RIC (Resource Integration Committee	First-level approvals body responsible for supervising and monitoring the integrated resource management planning program.
Riparian Lands	Lands on the banks of, or adjacent to, rivers or lakes.
RRMC (Regional Resource Management Committee)	Group of regional directors representing each of the involved divisions of Alberta Energy and Natural Resources and other agency representatives on an occasional and as needs basis. The RRMC reviews planning documents and has primary responsibility for the implementation stage of the planning process.
Small Scale Grazing	Grazing leases, (excepting grazing associations), licences and permits, not exceeding an area sufficient to graze 200 animal units.
SO Designated Lands	Crown lands in the Slave Lake Forest which lie "outside" the Green Area.
Sustained Yield Timber Management	Balancing of timber growth and harvesting to ensure continued forest productivity at a given level of management without impairing the productivity of the land.
TDA (Timber Development Area)	Area containing major development opportunities for forest industry growth. Within a TDA, various timber companies are invited to compete for the right to cut timber on a sustained yield harvesting basis under long term tenure. A successful award of a TDA is formalized through an FMA (or FMAs) or other disposition means.
Temporary Industrial Access	Industrial road intended to provide access during dry or frozen periods, which has a maximum design speed of 40 km/hr, a maximum

	clearing width of 20 m, ditches for erosion control purposes only where required, and a normal life expectancy of two years or less (AFS road classes IV and V. Note: Depending on the resource user, Class IV roads may be constructed to permanent or temporary standards).
Threatened Species	Indigenous species of fauna or flora likely to become endangered if the factors affecting its vulnerability do not reverse.
Till	Surficial geology comprising unsorted material of glacial origin. The composition varies, but is usually unstratified clay loaded with stones. Also called morainal deposits and boulder clay.
Tolerance Quota	Catch limit on non-target species imposed on commercial fishing to ensure that the sportfishery is not impaired.
Ungulates	Hoofed animals. The following ungulates occur in the planning area: elk, moose, mule deer, white-tailed deer and caribou.
Unimproved Grazing	Grazing lands that have had no or minimal modifications to enhance range productivity or which have no or minimal capacity for enhancement.
Upland	Used to denote a land, rather than a water orientation, which carries no connotation of relief. For example, upland furbearers - as distinct from aquatic furbearers.
White Area	Established in 1948 by order-in-council. It consists of that portion of the province in which settlement first occurred and comprises about one-third of the total area of the province. The emphasis is on settlement and agricultural uses. Lands not required for conservation, recreation, wildlife or forestry purposes may be applied for pursuant to the Public Lands Act and other regulations.

Wildland Recreation	Extensive recreation taking place in wilderness-type, or backcountry environments. Prerequities are an extensive land base with no or minimal evidence of man's presence.

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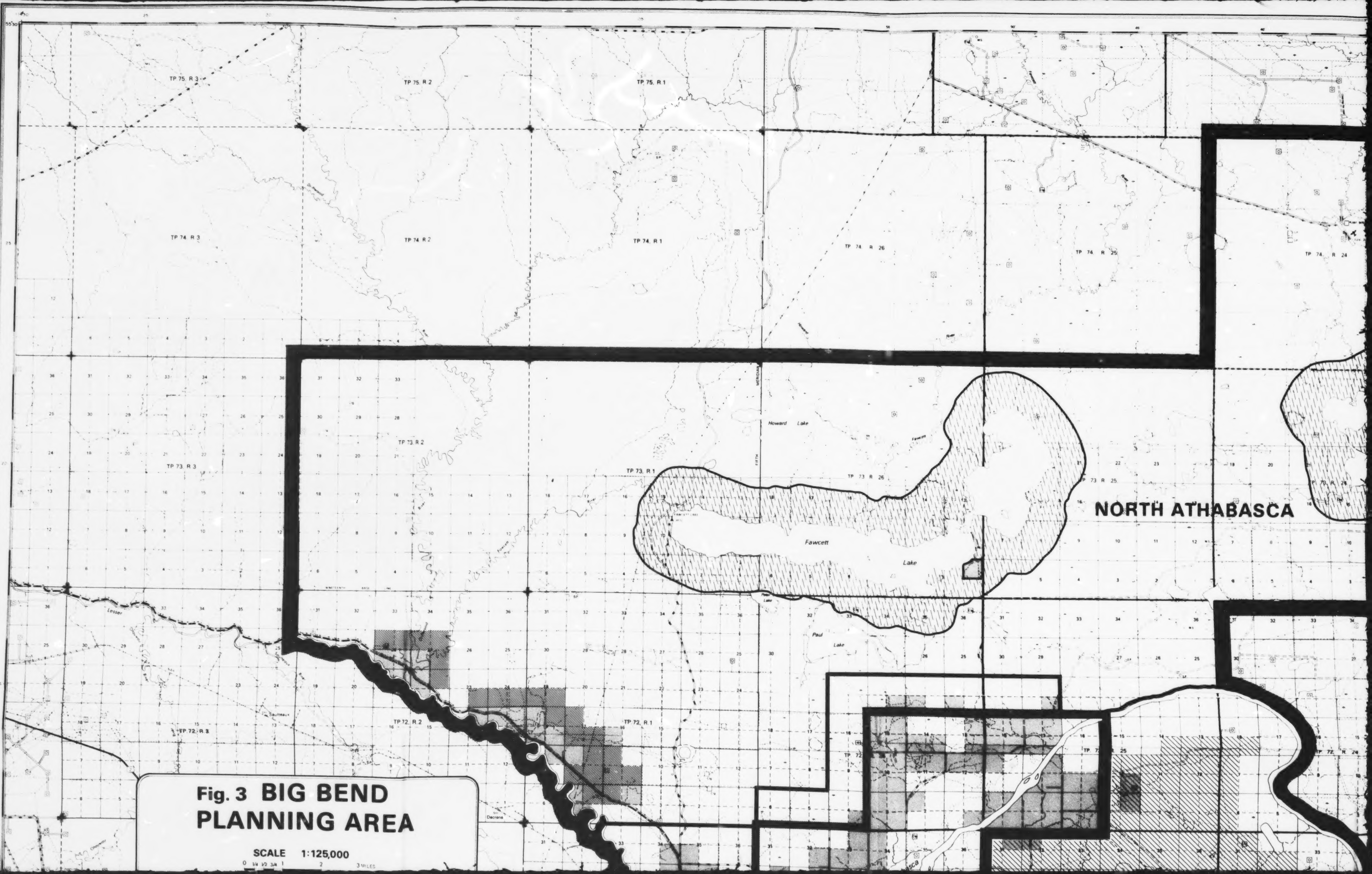
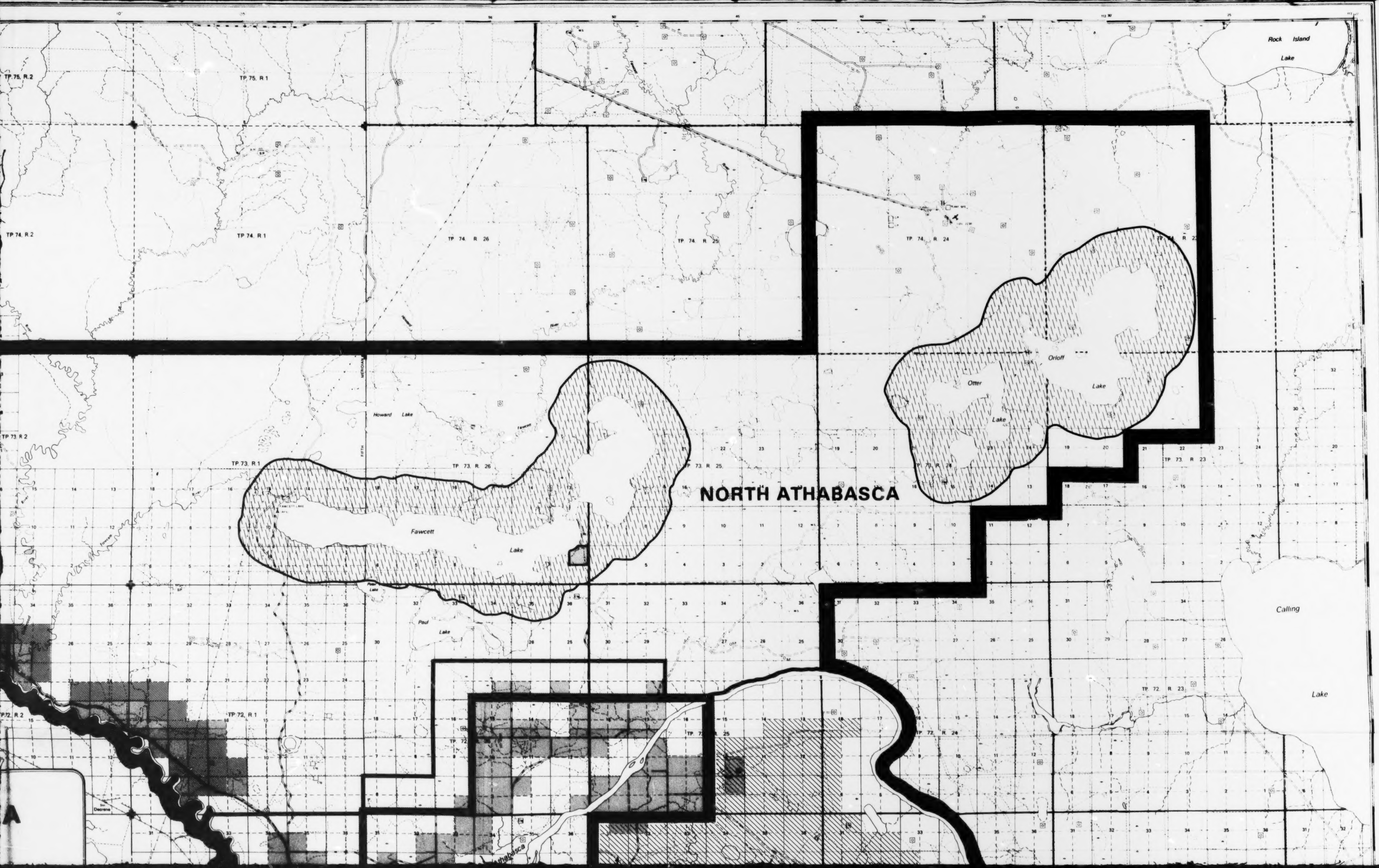


Fig. 3 **BIG BEND PLANNING AREA**

SCALE 1:125,000

0 1/4 1/2 3/4 1 2 3 MILES


Rock Island Lake
TP 75 R 2
TP 75 R 1
TP 74 R 2
TP 74 R 1
TP 74 R 26
TP 74 R 25
TP 74 R 24
TP 73 R 2
TP 73 R 1
TP 73 R 26
TP 73 R 25
TP 73 R 23
TP 72 R 2
TP 72 R 1
TP 72 R 24
TP 72 R 23
Howard Lake
Fawcett Lake
Paul Lake
Otter Lake
Orloff Lake
Calling Lake
NORTH ATHABASCA
Athabasca
Decrene

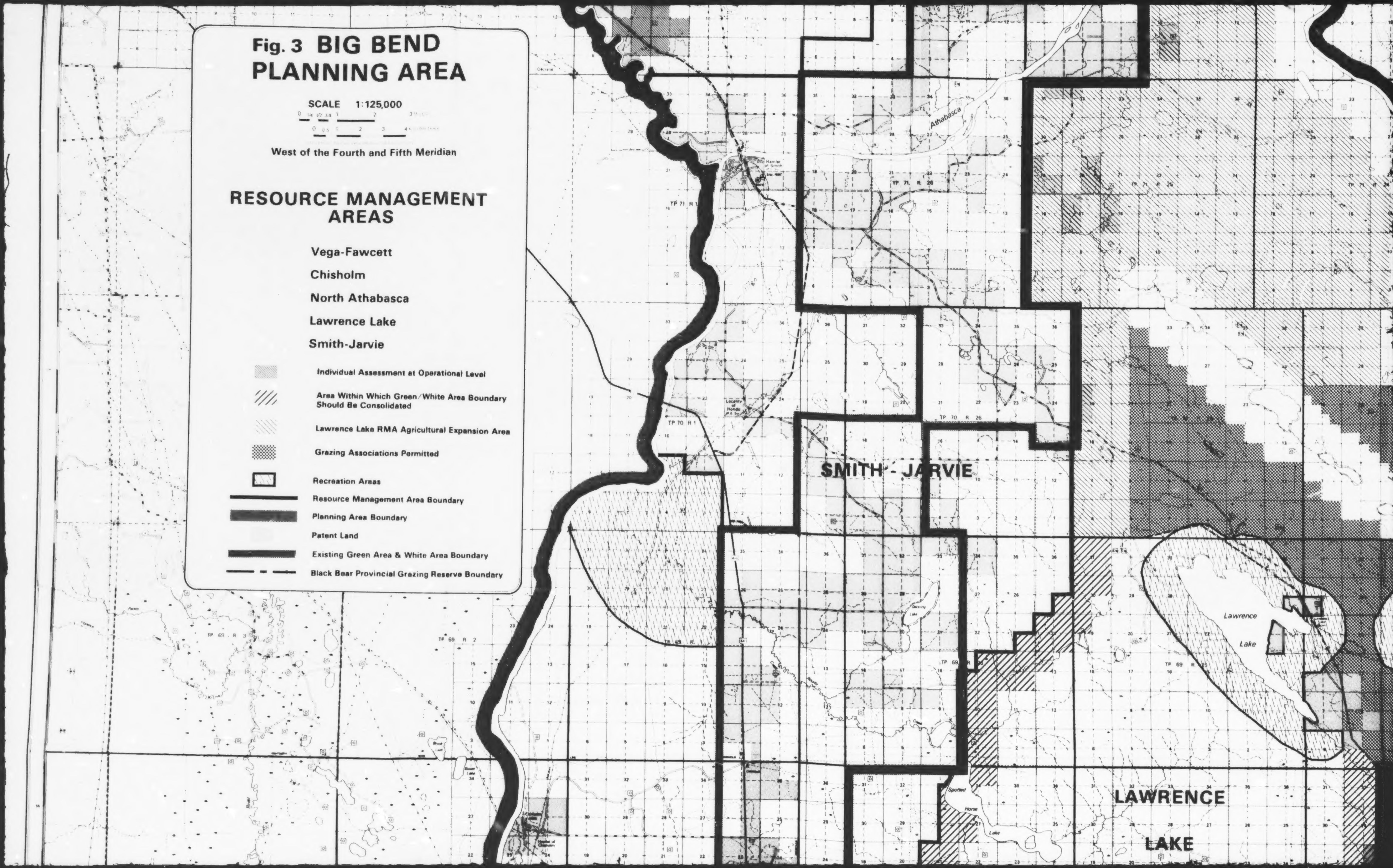
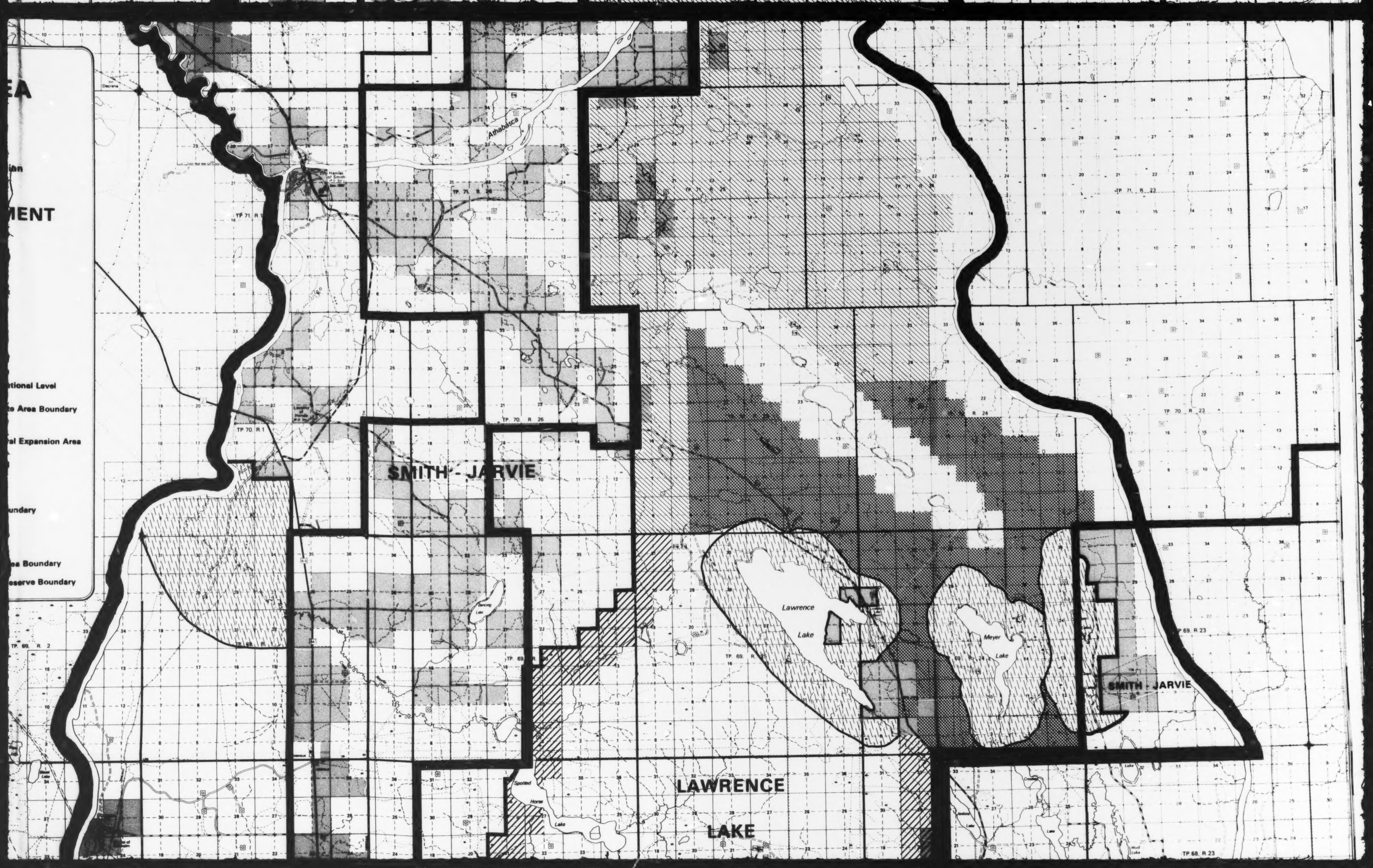
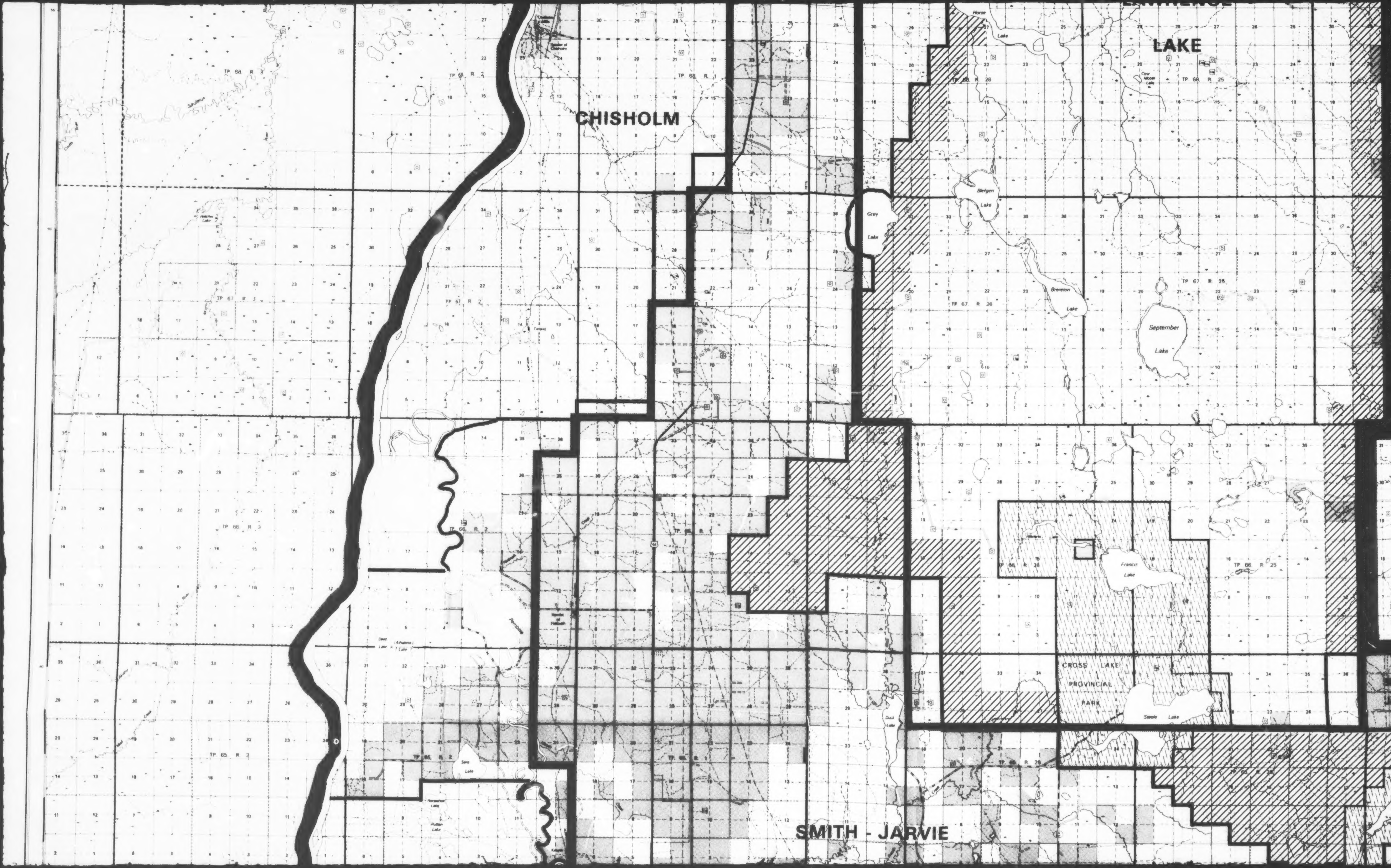


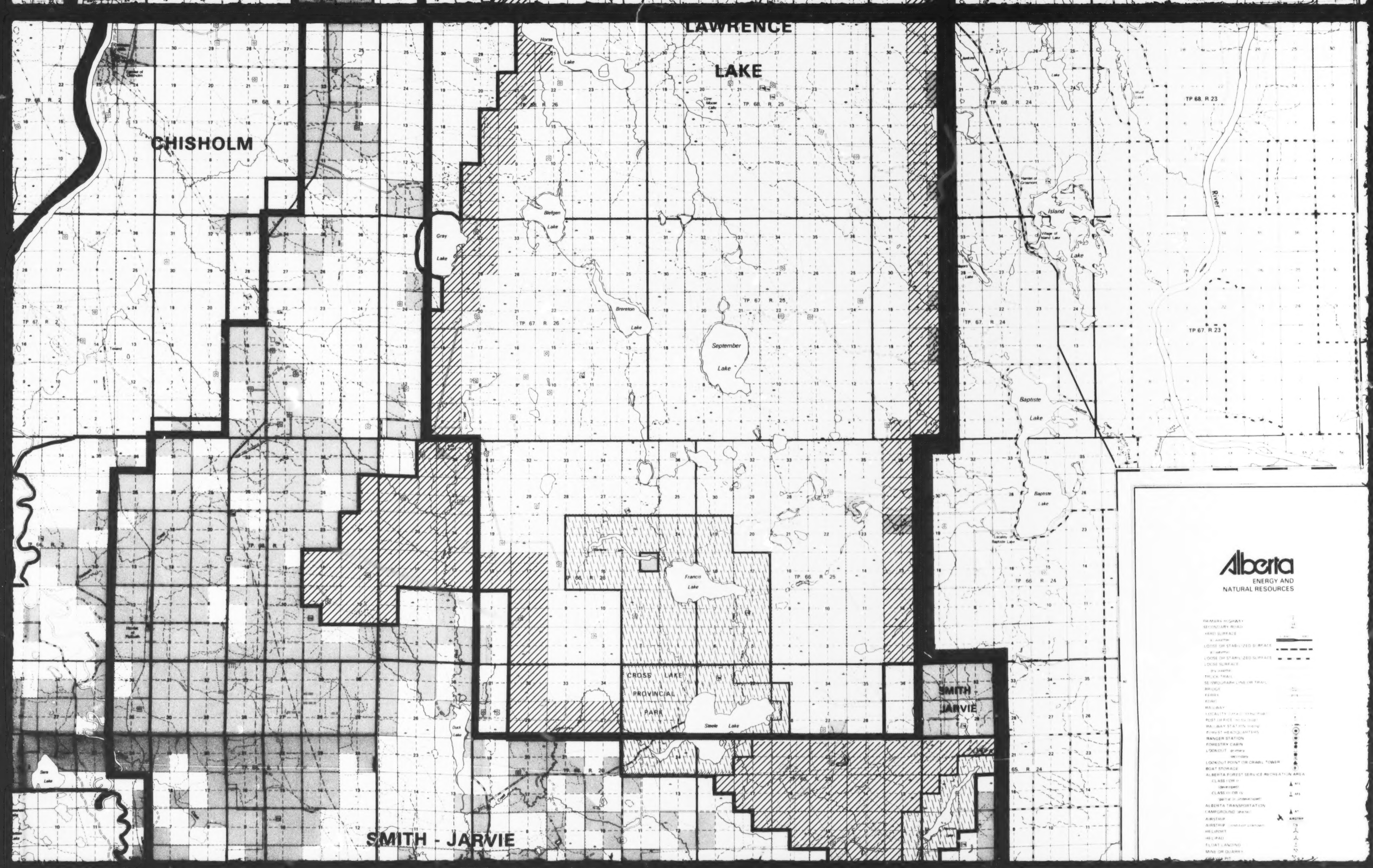
Fig. 3 BIG BEND PLANNING AREA

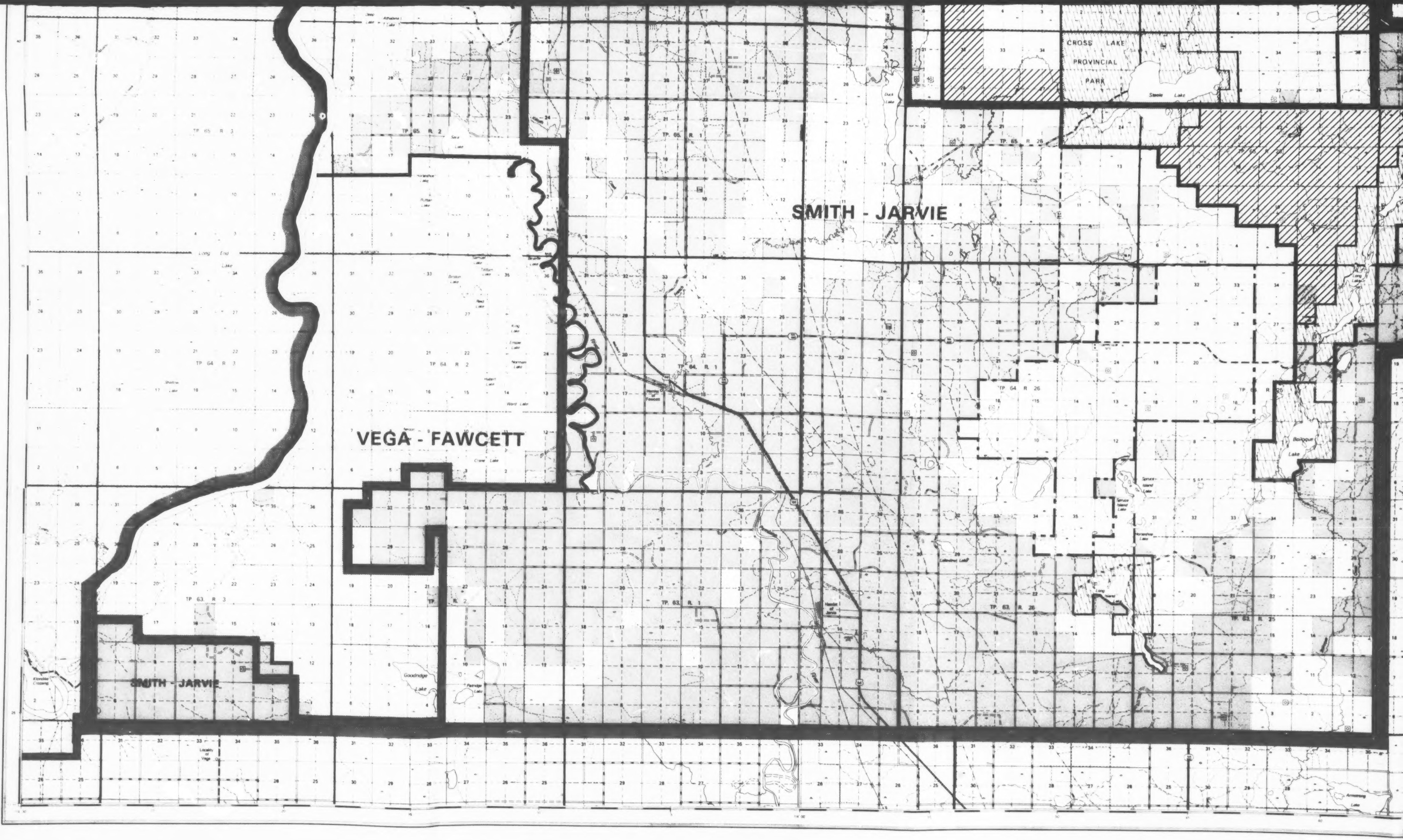
SCALE 1:125,000
West of the Fourth and Fifth Meridian
RESOURCE MANAGEMENT AREAS
Vega-Fawcett
Chisholm
North Athabasca
Lawrence Lake
Smith-Jarvie
Individual Assessment at Operational Level
Area Within Which Green/White Area Boundary Should Be Consolidated
Lawrence Lake RMA Agricultural Expansion Area
Grazing Associations Permitted
Recreation Areas
Resource Management Area Boundary
Planning Area Boundary
Patent Land
Existing Green Area & White Area Boundary
Black Bear Provincial Grazing Reserve Boundary
SMITH - JARVIE
LAWRENCE
LAKE
Lawrence
Lake
Athabasca
Hamlet of Smith
Locality of Hondo
Spotted
Horse
Lake
TP 71 R 1
TP 71 R 26
TP 71 R 25
TP 70 R 1
TP 70 R 26
TP 69 R 3
TP 69 R 2
TP 69 R 25

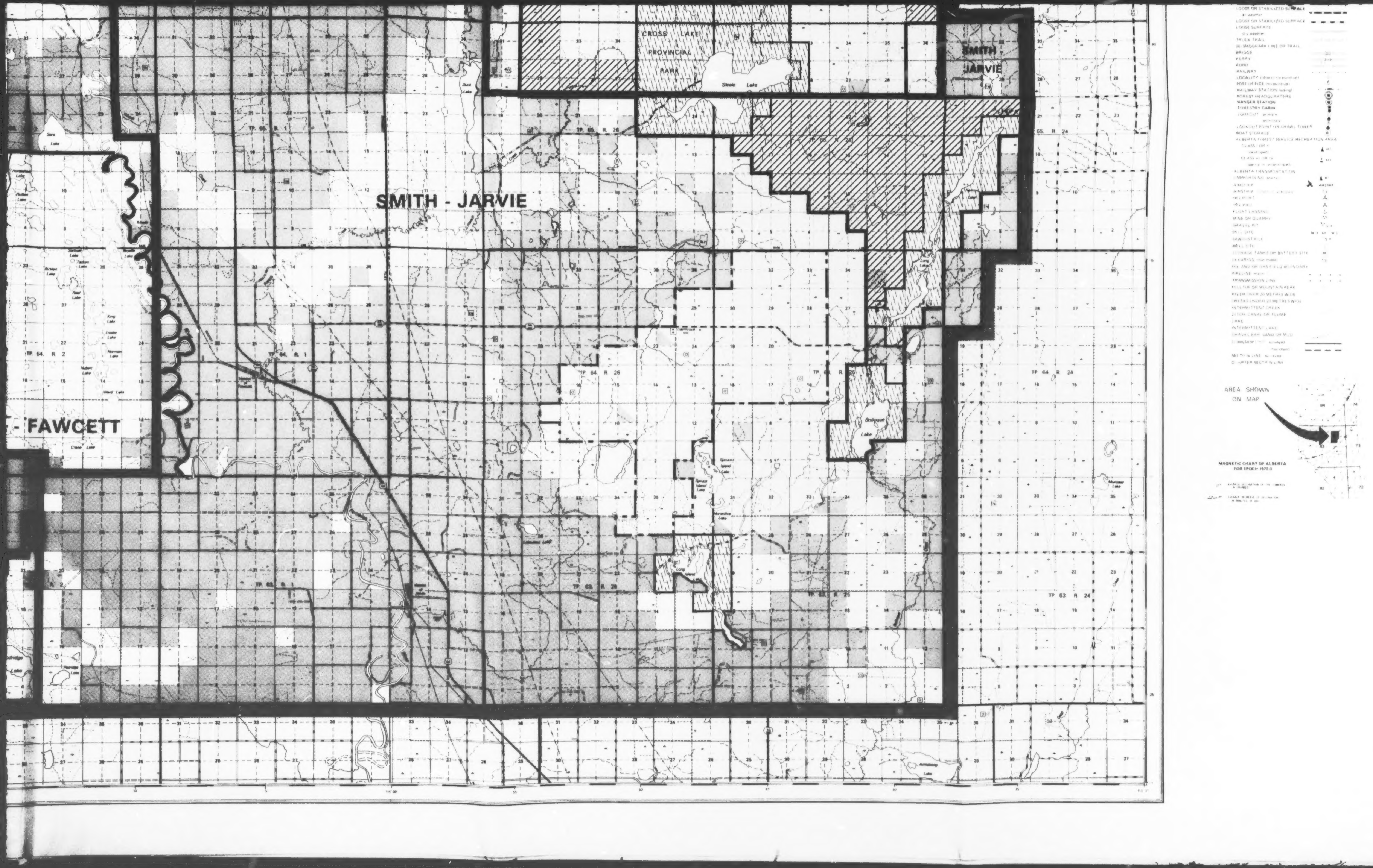


EA
ion
MENT
tional Level
te Area Boundary
al Expansion Area
undary
ea Boundary
eserve Boundary
Athabasca
Hamlet of Smith
TP 71 R 1
TP 71 R 26
TP 71 R 25
TP 71 R 24
TP 71 R 23
TP 70 R 1
TP 70 R 26
TP 70 R 24
TP 70 R 23
SMITH - JARVIE
Dancing Lake
TP 69 R 2
TP 69 R 1
TP 69 R 25
TP 69 R 24
TP 69 R 23
Lawrence Lake
Meyer Lake
SMITH - JARVIE
Spotted Horse Lake
LAWRENCE LAKE
Mud Lake
TP 68 R 23


CHISHOLM
LAKE
SMITH - JARVIE
CROSS LAKE
PROVINCIAL
PARK
TP 68 R 3
TP 68 R 2
TP 68 R 1
TP 68 R 26
TP 66 R 25
TP 67 R 3
TP 67 R 2
TP 67 R 26
TP 67 R 25
TP 66 R 3
TP 66 R 2
TP 66 R 1
TP 66 R 26
TP 66 R 25
TP 65 R 3
TP 65 R 2
TP 65 R 1
TP 65 R 26
Grey Lake
Blefgen Lake
Brereton Lake
September Lake
Horse Lake
Franco Lake
Steele Lake
Sara Lake
Horseshoe Lake
Duck Lake
Deep Lake
Athabasca Lake


LAWRENCE LAKE
CHISHOLM
SMITH - JARVIE
SMITH JARVIE
CROSS LAKE PROVINCIAL PARK
Horse Lake
Gray Lake
Bleifgen Lake
Brereton Lake
September Lake
Island Lake
Baptiste Lake
Francis Lake
Steele Lake
Duck Lake
River
TP 68 R 2
TP 68 R 1
TP 68 R 26
TP 68 R 25
TP 68 R 24
TP 68 R 23
TP 67 R 2
TP 67 R 26
TP 67 R 25
TP 67 R 24
TP 67 R 23
TP 66 R 26
TP 66 R 25
TP 66 R 24
Alberta
ENERGY AND
NATURAL RESOURCES
PRIMARY HIGHWAY
SECONDARY ROAD
HARD SURFACE
all weather
LOOSE OR STABILIZED SURFACE
all weather
LOOSE OR STABILIZED SURFACE
LOOSE SURFACE
dry weather
TRUCK TRAIL
SEISMOGRAPH LINE OR TRAIL
BRIDGE
FERRY
FORD
RAILWAY
LOCALITY
POST OFFICE
RAILWAY STATION
FOREST HEADQUARTERS
RANGER STATION
FORESTRY CABIN
LOOKOUT primary
secondary
LOOKOUT POINT OR CRAWL TOWER
BOAT STORAGE
ALBERTA FOREST SERVICE RECREATION AREA
CLASS I OR II
(developed)
CLASS III OR IV
(partial or undeveloped)
ALBERTA TRANSPORTATION
CAMPGROUND
AIRSTRIP
AIRSTRIP
HELIPORT
HELIPAD
FLOAT LANDING
MINE OR QUARRY
GRAVEL PIT


SMITH - JARVIE
VEGA - FAWCETT
CROSS LAKE
PROVINCIAL
PARK
Steele Lake
SMITH - JARVIE
TP 65 R 3
TP 65 R 2
TP 65 R 1
TP 65 R 26
TP 64 R 3
TP 64 R 2
TP 64 R 1
TP 64 R 26
TP 63 R 3
TP 63 R 1
TP 63 R 26
TP 63 R 25
Long End Lake
Goodridge Lake
Bourque Lake
Spruce Island Lake
Duck Lake
Armstrong Lake
Locality of Vega
Hamlet of Fawcett
Hamlet of Jarvie
114°00'


SMITH - JARVIE
SMITH - JARVIE
- FAWCETT
CROSS LAKE PROVINCIAL PARK
Steele Lake
Duck Lake
Sara Lake
Bolloque Lake
Spruce Island Lake
Long Island Lake
Muskeg Lake
Armstrong Lake
TP. 65. R. 1
TP. 65. R. 26
TP. 65. R. 25
65. R. 24
TP. 64. R. 2
TP. 64. R. 1
TP. 64. R. 26
TP. 64. R. 25
TP. 64. R. 24
TP. 63. R. 1
TP. 63. R. 26
TP. 63. R. 25
TP. 63. R. 24
LOOSE OR STABILIZED SURFACE all weather
LOOSE OR STABILIZED SURFACE
LOOSE SURFACE dry weather
TRUCK TRAIL
SEISMOGRAPH LINE OR TRAIL
BRIDGE
FERRY
FORD
RAILWAY
LOCALITY (little or no build-up)
POST OFFICE (no build-up)
RAILWAY STATION (siding)
FOREST HEADQUARTERS
RANGER STATION
FORESTRY CABIN
LOOKOUT primary
secondary
LOOKOUT POINT OR CRAWL TOWER
BOAT STORAGE
ALBERTA FOREST SERVICE RECREATION AREA
CLASS I OR II (developed)
CLASS III OR IV (partially undeveloped)
ALBERTA TRANSPORTATION
CAMPGROUND
AIRSTRIP
HELIPORT
HELIPAD
FLOAT LANDING
MINE OR QUARRY
GRAVEL PIT
MILL SITE
SAWDUST PILE
WELL SITE
STORAGE TANKS OR BATTERY SITE
CLEARING
OIL AND OR GAS FIELD BOUNDARY
PIPELINE
TRANSMISSION LINE
HILLTOP OR MOUNTAIN PEAK
RIVER OVER 20 METRES WIDE
CREEKS UNDER 20 METRES WIDE
INTERMITTENT CREEK
DITCH, CANAL OR FLUME
LAKE
INTERMITTENT LAKE
GRAVEL BAR, SAND OR MUD
TOWNSHIP LINE surveyed
unsurveyed
SECTION LINE surveyed
QUARTER SECTION LINE
AREA SHOWN ON MAP
MAGNETIC CHART OF ALBERTA FOR EPOCH 1970.0